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A MONTHLY JOURNAL DEVOTED TO THE ELEVATOR AND GRAIN INTERESTS.

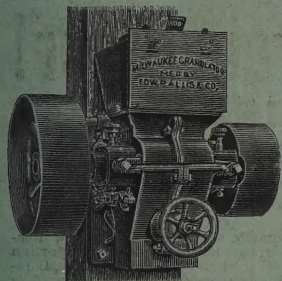
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Vol. IV.

CHICAGO, ILLINOIS, DECEMBER 15, 1885.

No. 6.

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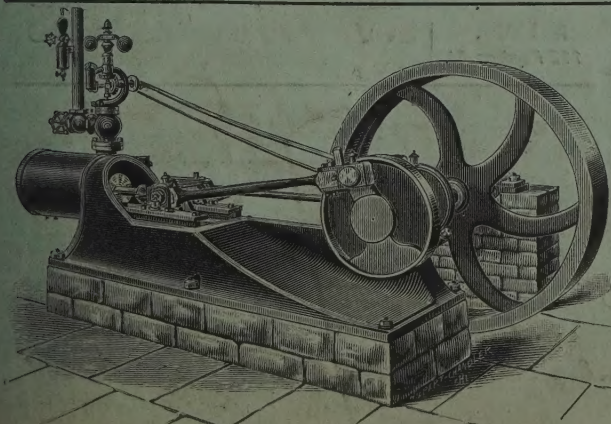
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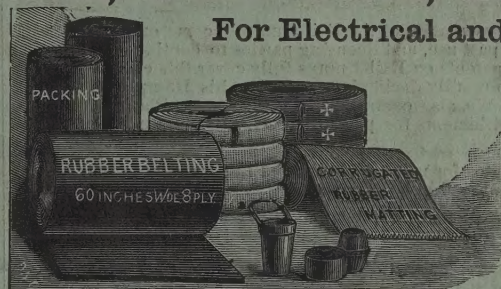


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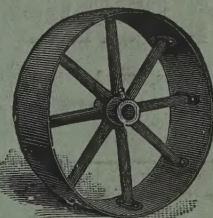


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CHERRYVALE, KAN., March 9, 1885.  
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Very truly yours, G. B. SHAW & CO.  
A. C. SHERMAN, Grain Dealer,  
ROSSVILLE, KAN., March 5, 1885.

DEAR SIR:—I desire to say, that by following plans in building my Elevator at St. Marys, Kan., furnished me by you, and placing my order for machinery with Barnard & Leas Mfg. Co., of Moline, Ill., for Wheat Cleaner, Corn Sheller, and Cleaner and Elevator Goods entire, I now have one of the best Elevators in the state. Everything works splendid and to my entire satisfaction.

Respectfully,  
A. C. SHERMAN.

OFFICE OF TUDOR, ELLIOTT & Co., Grain and Chopped Feed, HOLTON, KAN., March 21, 1885.

DEAR SIR:—We like the plan of our Elevator very much, and do not think that for a building of the size of ours the plans could be improved upon. Everything is simple and handy, and very easily run. The machinery works fine, and has ever since we started, and the Sheller is the best we have ever seen. The Corn and Wheat Cleaners could not do any better work than they do. We are fully satisfied and pleased with everything, and

should we conclude to erect another Elevator at some other point, will consult you for a plan.  
Yours very truly, TUDOR, ELLIOTT & Co.

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DEAR SIR:—The Elevators you designed for us at Fontana, Kan., and Sprague, Mo., are giving entire satisfaction. and the machinery all does its work well. We consider your plan very convenient, substantial and economical.

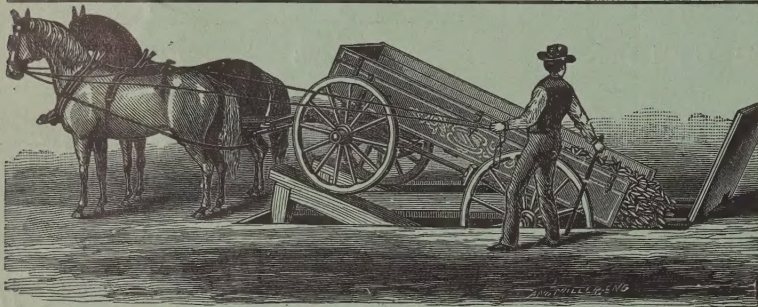
Yours very truly, B. F. BLAKER & Co.

BRINSON, HILL & Co., Grain Commission Merchants, OTTAWA, KAN., April 2, 1885.

DEAR SIR:—Replying to your favor of recent date, we take pleasure in saying, our new elevator built here last season, on your plans and specifications, gives us highest possible satisfaction; and the machinery furnished by Barnard & Leas Mfg. Co. is first-class in every respect, and works to our entire satisfaction. We have, up to this date handled about 150,000 bushels of ear corn, and a large amount of other grain through our elevator, and with your complete outfit of machinery, etc., and have not been to a nickel's expense or had one minute's delay from any cause whatever, all of which we credit to your well-arranged plans, and good class of machinery furnished by your house.

We can fully recommend and indorse your architecture and machinery, and you have liberty to refer to us, any time, any one contemplating building an elevator.

Very truly yours,  
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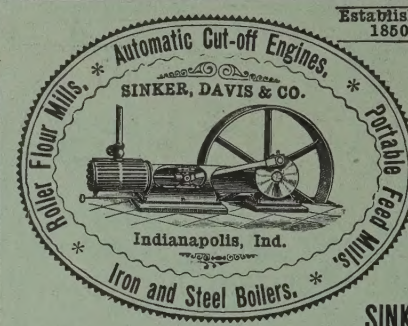
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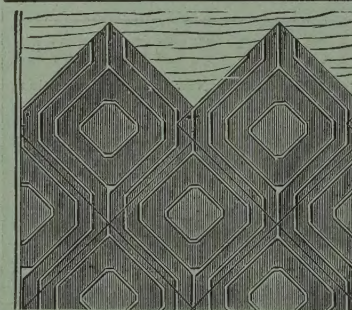
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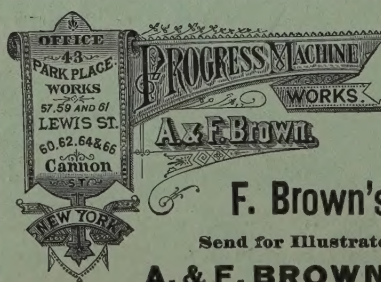
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## BELTS AS GRAIN CONVEYORS.

BY T. W. HUGO, DULUTH, MINN.

Belts for conveying grain are more extensively used in the Duluth elevator system than in any other place in the world, as far as the writer is aware, and information on such subjects is very limited. These two facts have led to the presentation of this paper in the hope that, at least, attention might be drawn to this important feature in grain handling.

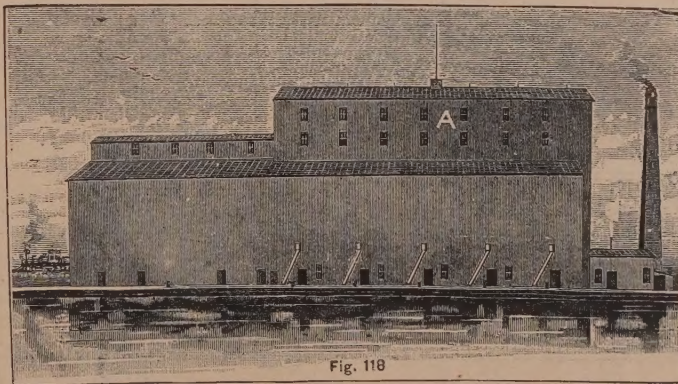
A description of the various belt conveyors in use in this place will necessarily include mention of the different elevators, and they will be taken in order according to age.

In 1869 Elevator "A" was built, with a capacity of 350,000 bushels (*Fig. 118*). It is a single track, five-car house, having five receiving and three shipping legs, and three cleaning machines, and the motive power is supplied by a horizontal non-condensing engine 24"x30", with plain slide valve, cut-off on back, and a throttling governor. This engine makes 68 revolutions per minute, and was built by the N. W. Mfg. Co., of Chicago.

In 1879 an annex was built, with a capacity of 210,000 bushels. *Fig. 118* shows a view of the house as it exists at present, the annex being distinguished by its cupola, which is one story less in height than the main building. Two conveyor belts are used, an upper belt to convey the grain out to the annex, and a lower one to bring it back. The power to drive the upper belt is transmitted from the main line of shafting in the cupola to a 24" straight face pulley by a belt; this is the driving pulley for the 36" rubber belt, which has a speed of 650 feet per minute, and is supported by and runs over concave wooden rollers, very nearly similar to *U* (*Figs. 121 and 122*), 9" in diameter at the ends and 4½" in diameter in the center, placed at 4 feet centers. The framework for these is built on the bin floor in "A" on an incline of 7 feet in 60 feet. This 60 feet brings the belt to the annex in which it runs horizontally, passes through the dumper, and at a distance of 155 feet from the driving pulley passes around a 24" straight face pulley, which is made to serve as a tightener, and returns, being supported by concave wooden rollers placed at 12 feet centers. This belt will carry 8,500 bushels of wheat per hour.

For the purpose of conveying the grain back to the main building a combination belt is used, of which *B. C. B'*, *Fig. 119*, is a section. *B B'* are two ordinary 7" rubber belts connected together and kept apart by 1¼"x¼" band iron riveted to each belt at a distance along the length of the belt of 4 feet centers; these distance strips

are shaped like *C*, *Fig. 119*. Heavy canvas is also riveted to the rubber belts, which bags down 4½" in the center, the whole forming a conveyor three feet in width. The rollers over which the belt runs are as shown in *D D'*, *Fig. 119*. Two wooden rollers are on an iron axle, the upper part of the combination belt only touching the rollers. This belt travels 650 feet per minute, and from the extreme end of the annex runs horizontally for a distance of 95 feet under the floor through which the grain from the bins falls on to it. It then rises at an angle of 36° for a distance of 30 feet, passing around a 36" straight face wooden driving pulley over which the grain is discharged. This pulley is cut away in the center to allow the belt to pass around without touching the concave part. The capacity of this belt is 12,000 bushels per hour.



ELEVATOR "A," DULUTH, MINN.

In the fall of 1880 Elevator "B," with a capacity of 1,000,000 bushels, started to receive and ship grain. This is a double-track house for ten cars on a track, with ten receiving and six shipping legs, and having originally four, but now six, cleaning machines. A vertical, overhead, condensing engine supplies the motive power, making 58 revolutions per minute, the cylinder being 42"x42", with plain slide valve and cut-off on back and a throttling governor.

In 1882 Warehouse "C," with a capacity of 1,100,000 bushels, was built in a line with, but 250 feet from, "B." *Fig. 120* will give a view of the situation; the two being connected together by conveyors.

The power necessary to drive the upper conveyor belt is transmitted from the main line of shafting in the cupola in "B," through a belt, shaft, and bevel gears to the iron driving pulley, 48" in diameter at edges, with ¼" crown, which communicates motion to a 36" four-ply rubber belt. For 88 feet it runs horizontally, then on an up-grade of ¼" to a foot. At 16 feet from the beginning

of the grade it enters a gallery 9 feet wide by 8 feet high and 250 feet long, built on trestle work, as shown in *Fig. 120*. It then enters "C" on the top floor of the cupola, passes through the dumper, and after thus running 300 feet horizontally it passes over the tightener pulley at the end and returns between the track on which the dumper runs. The belt runs 775 feet per minute, and is supported by concave wooden rollers, *u*, 9" in diameter at ends, and 5½" in diameter in center, placed at 6 feet centers on the upper or loaded part, and 12 feet centers on the under or return part. The framework on which are fastened the bearings for the rollers is made of 3"x8" pine, gradually decreasing in height from 7 feet at the driving pulley to 14" at "C," where the 2½"x5" stringers, on which the lower rollers have their bearing, rest on the floor. The upper and lower parts of the belt are made to run at a distance of 16" from one another by means of intermediate idler pulleys.

The dumper mentioned above is shown in *Fig. 121 and Fig. 122*, in which *A* is a cast-iron frame running on and supported by wheels, *B*. It is cast in two pieces, bolted together at the center, as at *C*, and so constructed as to receive the shaft *E*, which passes through and is keyed fast to the movable casting *H*. This casting has a bearing fitted in the end of each long and each short arm, in which run the journals of the rollers, *I* and *I'*. The gear, *K*, is fastened to the shaft, *E*, and the hand-wheel, *L*, is fastened to the worm, *N*. *O* is the upper belt and *P* is the lower, the arrows indicating the direction of the belt's motion. *R* is a sheet-iron spout swiveled at *S* to

the frame *A*, so that it can be swung around to the side. Similar letters refer to similar parts in *Figs. 121 and 122*. In Elevator "B," close to the driving pulley, and along for a distance of 75 feet, are hoppers which receive the grain from the scales above. These hoppers come down to within a merely clearing distance of the belt, the grain being discharged through long, narrow openings regulated by slides.

It is sometimes necessary to prevent the grain from jumping off the belt when falling from the hoppers, and for this purpose concentrators, *Figs. 123 and 124*, are used which are fastened to the framework that supports the belt and rollers, and are placed one on each side of the belt opposite the hopper. When the lignum vitae rollers are brought close enough together by means of the screw, the sides of the belt are correspondingly turned up, thus preventing any grain from spattering off at the time it falls into the belt. After once it is there it lies as quietly as if glued on, and not a single kernel need be lost in the run of over 600 feet. A little of the ligh



husks, jarred to the surface by the motion, will be blown off, but the grain will pile up until it is sometimes 6" deep in the center of the belt, running out to nothing about 1" from the edge. At from 35 feet to 40 feet from the dumper the belt leaves the rollers and ascends to a height of 45" from the line of rollers, and as it passes around the upper roller of the dumper, *y*, at almost a right angle, the momentum of the grain is sufficient to carry it forward, an unbroken stream of grain, into the opening, *T*, in the dumper, from whence it passes through the spout *R* through hoppers built in the floor, through wooden spouts into the different bins.

There are ten of these openings or hoppers built in the floor at the side of the dumper track, close enough to be reached by the spout, *R*, when turned sideways. Each of these openings is over a circle of spouts which lead to the 180 bins in the house.

When it is necessary to move the dumper to another part

Starting from the end of "C," where the tightener is placed, the belt runs 300 feet horizontally on rollers similar to *u*, supported by a raised framework under the floor, then up-grade  $\frac{1}{2}$ " to a foot, through a gallery built on the dock, 250 feet long, and 38 feet into "B," where it runs over the driving pulley, the grain on it being discharged over the end into a hopper, from whence it is spouted to the different elevating legs. Holes are cut in the lower floor in "C," and hoppers with long, narrow openings are built at convenient distances over the belt into which the grain from the bins overhead is spouted. This belt has carried 14,000 bushels of wheat per hour.

In the St. Paul and Duluth elevator a conveyor belt is used for the purpose of shipping grain into vessels, the elevator being built back from the dock. The belt runs in a gallery elevated on posts about 25 feet high, leading from the end of the elevator at an angle of 45° to the

shipping legs, and five cleaning machines. An overhead vertical condensing Reynolds-Corliss Engine, 34"x36", making 66 revolutions per minute, supplies the power. Work has begun on Warehouse "F," with a capacity of 1,250,000 bushels, to be built in a line with "E," but 250 feet distant from it, and connected by conveyors in a manner but slightly differing from "B" and "C," Fig. 120. The upper conveyors will be 160 feet in "E," 250 feet between "E" and "F," and 300 feet in "F," so that there will be 710 feet between centers of shafts at ends. The lower belt will be 50 feet in "E," and the same as the upper one beyond that, making a total of 600 feet between centers of shafts at ends.

Also in December, 1884, Elevator "D" was built, with a capacity of 1,200,000 bushels. This is a double-track house for nine cars on each track, with nine receiving and eight shipping legs, and eight cleaning machines. A steeple compound condensing overhead vertical Cuya-

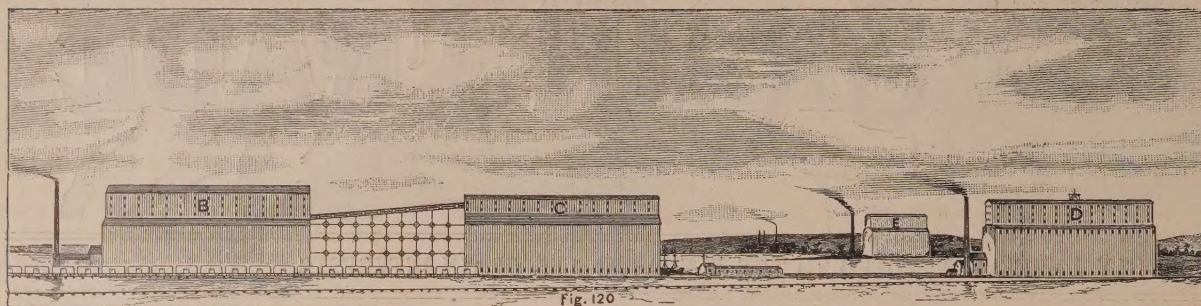


Fig. 120

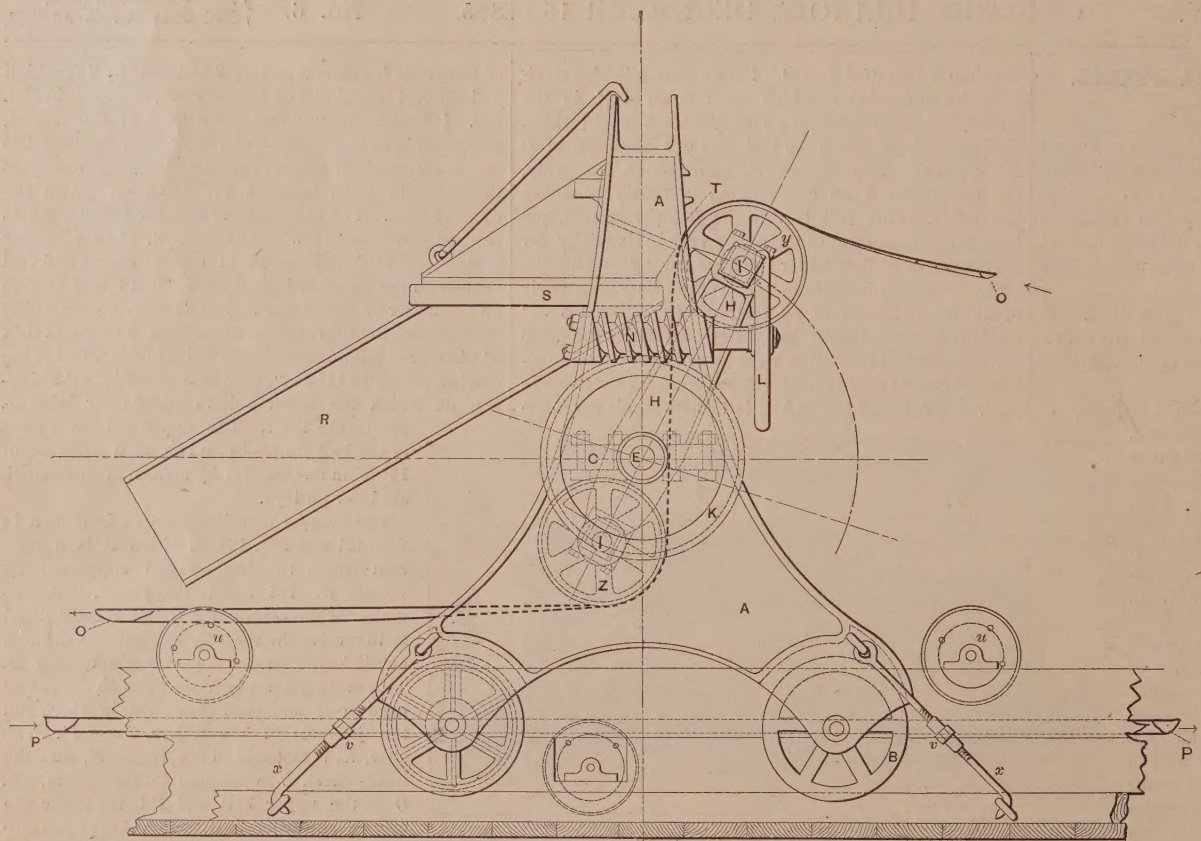


Fig. 122

of the house, the upper roller, *Y*, is lowered, and by the same motion the lower roller, *Z*, is raised by means of the worm, *N*, and gear, *K*, the power being applied to the hand-wheel, *L*; the casting, *H*, and shaft, *E*, turning in the bearings, *C*. The right and left nuts, *V*, are slackened, the stays, *X*, unhooked, and the dumper pushed bodily along the track to its destination. When in place, the stays are hooked in and tightened, and by means of the worm and gear the casting is brought to the position shown in Fig. 122. The belt can be started immediately, the operation thus consuming very little time. This belt will carry 13,000 bushels of wheat per hour.

The power for the lower conveyor belt is taken off the end of the engine shaft, using a sprocket wheel with friction clutch, link belt, shaft, bevel gears, and a wire rope 262 feet between centers of shafts to transmit to the driving pulley 48" diameter with  $\frac{1}{4}$ " crown. Belt and speed are the same as in the upper conveyor.

dock front, a distance of 300 feet. The belt is a 50" four-ply rubber belt, running on rollers somewhat similar to *u*, Figs. 121 and 122, pitched at 6 feet centers on the upper and 12 feet centers on the lower part, which are 10" in diameter at the ends and 5½" in the center. The power to drive this belt is taken from the main line of shafting below, transmitted by a quarter twist belt to a 48" straight face wooden pulley. The grain drops on the belt close to this driving pulley, travels 600 feet per minute on an incline of two feet in 300 feet, and discharges over the 24" tightener pulley at the end into a hopper, from which, through two 12" iron telescope spouts, it shoots into the vessel. Only portions of two cargoes were shipped last year, so that no reliable data are at hand. A horizontal Hamilton-Corliss Engine, 18" x30", non-condensing, supplies the power.

In the fall of 1884 Elevator "E," with a capacity of 800,000 bushels, was built. It is a double-track house for five cars on each track, with five receiving and five

hoga Engine furnishes the power. The cylinders are 24" and 44" x48", arranged for 66 revolutions per minute; the steam is cut off in a small cylinder only, and the dead space reduced very much by making the bottom of the small cylinder serve as the top of the large one, and in this way the cylinders are brought as close together as a steep engine can be got. A throttling governor is used. This engine has given excellent satisfaction, and considering the very variable nature of elevator work, the necessity for providing for heavy loads at any time without warning, and the surety of running a large engine two-thirds of the time with little more than friction loads, it is the writer's opinion that a properly constructed compound engine is pre-eminently fitted for elevator work, and will prove itself so, all the factors of fuel, interest, maintenance, being counted in.

Work has been commenced on "G," with a capacity of 1,500,000 bushels, to be connected to "D" by belt conveyors, the general arrangement being similar to that already

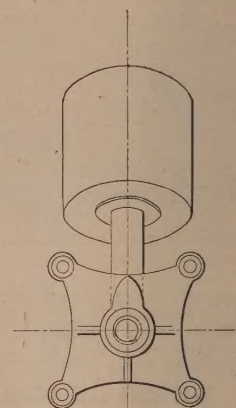


Fig. 124

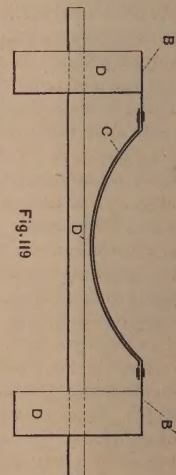


Fig. 119



described. The upper belt will be 280 feet in "D," 250 feet between "D" and "G," and 350 feet in "G." The lower belt will be 50 feet in "D," 250 feet between and 350 feet in "G," making a total length between centers of pulleys at ends of 880 feet for the upper conveyor, and 650 feet for the lower.

As stated at the beginning of this paper, its object is to add something to the very small amount of information that is public property on this subject. For that purpose the writer made some tests with a view to ascertain the amount of power required for the different conveyors in "B" and "C," and intended to submit the results to the society, but since this paper was begun his attention was drawn to Mr. D. K. Clark's observations in his manual, on this subject, and these disagreeing very materially from the results of the writer's tests, it was decided to withhold those results for the present until an opportunity presented itself for verification by more extensive experiments. The opportunity will be afforded as soon as "F" and "G" are completed, and in conjunction with the shipping belt of the St. P. & D. elevator will present means for eliminating errors possible in a solitary example.

Enough has been said to show that it is a satisfactory method of handling grain, and not grain alone, but there are various articles that could be expeditiously and cheaply handled by this plan, or modifications of it to suit the articles to be handled.

With grain the belts give no trouble whatever, even with belts over 1,300 feet long, and no trouble is anticipated with the long one (almost 1,800 feet) which will be used in "G." The warehouse can be built very much cheaper than a regular elevator, and will be as efficient as a warehouse. Very few extra men are required to attend to it; paying work is made for the motive power when it would otherwise be idle; the rate of insurance is lessened; the cost of maintenance is very small; and with larger rollers, or sectional rollers lubricated through a hollow shaft, the friction can be very much decreased. Should it be desired, by a proper belt speed, angles of 45° can be ascended, and the grain thus elevated without buckets on the belts, and experience with the longest belt conveyors in the world has proved their usefulness, their reliability and their economy.

Says the *Farmers' Advocate* of St. Paul: Commenting upon the effort of the Minneapolis Millers' Association to freeze out local wheat buyers at Glencoe, by advancing the price at points near by several cents above the market, the *AMERICAN ELEVATOR AND GRAIN TRADE* says: "The railroads can easily be stopped from discriminating against a town, but how an institution like the Millers' Association can be prevented from doing so, if it sees fit, we fail to see." Our contemporary is evidently a little near-sighted, or at least not so far-sighted as the enterprising business men of Glencoe. They saw the way discrimination against them could be estopped, and promptly proceeded to put their plan into execution, and so effective was it, that the Millers' Association doubly discounted the "come down" time of Davy Crockett's coon. In fact, the Association was in such haste to "come down" that it fairly tumbled over itself in doing it. The means used may not be known to the legal vocabulary of our contemporary, but it is coming into use quite frequently, and is termed "boycott." The business men of Glencoe simply boycotted the business men of Minneapolis, who in turn played Davy Crockett to the Millers' Association. See?

Chicago receipts of flaxseed for November were 1,166,250 bushels—a decrease of 1,213,250 bushels from October, but a gain of 493,000 bushels over November, 1884. Receipts for the past eleven months were 5,191,675 bushels.

## GRAIN; ITS STOWAGE, STORAGE, AND PRESERVATION.

In the November issue we gave a description of the various methods resorted to to preserve grain in stores and granaries both by chemical changes and from internal moisture. The preservation of breadstuffs has occupied the attention of inventors both in Europe and this country from time immemorial. A patent was granted to Donald Currie in Great Britain in 1827, for preserving grain and other vegetable and animal substances. We copy from the specification as follows: "The grain is preserved in air-tight vessels, vaults, or other proper receptacles, from which the atmospheric air has been

ing is the specification: "My invention consists in removing, by disintegration or decomposition partly or entirely, the ligneous or outer pellicle of the grain by moistening the same with, or immersing it in, a caustic alkaline solution, such, for instance, as caustic soda or lime. This moistening may be effected by hand or by means of any suitable mechanical arrangement. The grain, after having been sufficiently submitted to the action of the alkaline solution, is dried at once, or the same may be first washed and then dried, and will be found to yield more and better flour, keep for a greater length of time, and germinate better than if left in the natural state." Another invention of this nature consisted in treating the grain with ether, chloroform, sulphuretted of carbon, and other anæsthetic agents to destroy insects, and for the purpose of retarding and preventing fermentation.

In operating upon dry grain, previously introduced into hermetically closed chambers, the proportions used are three ounces by weight of chloroform or sulphuretted of carbon per cubic yard of contents. Twenty-four hours exposure is sufficient. The grain may be preserved in the chambers. One ounce and a half of either of these agents in the state of vapor will produce the same result if the grain be kept in contact therewith. In 1860 a patent was granted in Great Britain to William Clarke for a method of storing and preserving grain, of which the following is the specification: "The grain is stored in large cylindrical vessels formed of segments of baked clay hooped with iron. A sufficient number of these, supported by suitable framework, constitute the granary. There is a winnowing machine through which the grain is passed as required, the grain being supplied thereto from a common receptacle into which all the vessels discharge. The same receptacle can also be caused to discharge into sacks. This latter is effected by causing the grain to pass through an apparatus which being connected with a weighing machine weighs the wheat and sounds an alarm which gives warning that the valve is closed and that the sack is full. The grain is also measured by a meter with a valve at top and bottom which are opened and closed alternately. Two such meters may be used, acting simultaneously. An

indicator may be employed to register the amount passed. A small granary of this sort may be worked by a steam engine or horse-gear, which operates a threshing machine, placed near the granary. Another method was afterward patented by the same party in which he recommends inclosing the grain with any chemical agent having an avidity for moisture, such as caustic, potash, chloride of calcium," etc.

Robert Potter obtained an English patent in 1866 for

"cleansing, purifying and bleaching various kinds of grain." Sulphuric acid, chloride of lime, and salt mixed with water are used in various proportions to treat grain. For barley 2½ pounds of chloride of lime with or without 1½ to 2 ounces of sulphuric acid in 120 gallons of water. This is enough to treat 35 bushels of wheat. For oats 5 to 6 ounces of sulphuric acid and half a pound of salt to 120 gallons of water for 35 bushels. Or the salt may be omitted and 6 to 8 ounces of acid used. Either of these may be used for wheat, the grain to be steeped from two to three hours. Chlorine gas may also be used instead of chloride of lime, and the chlorides of potash and soda may be employed in the same proportions. A Mr. Bellford obtained a patent in Great Britain in 1854 for "treating grain, flour or other substances and retard the process of decay, which, it is stated, where there is only a small amount of moisture invariably commences at the center of the heap or mass, and thence extends in all directions. To this end the center of the mass is removed by placing therein an open tube or tubes, or by the employment of any substantially similar means by

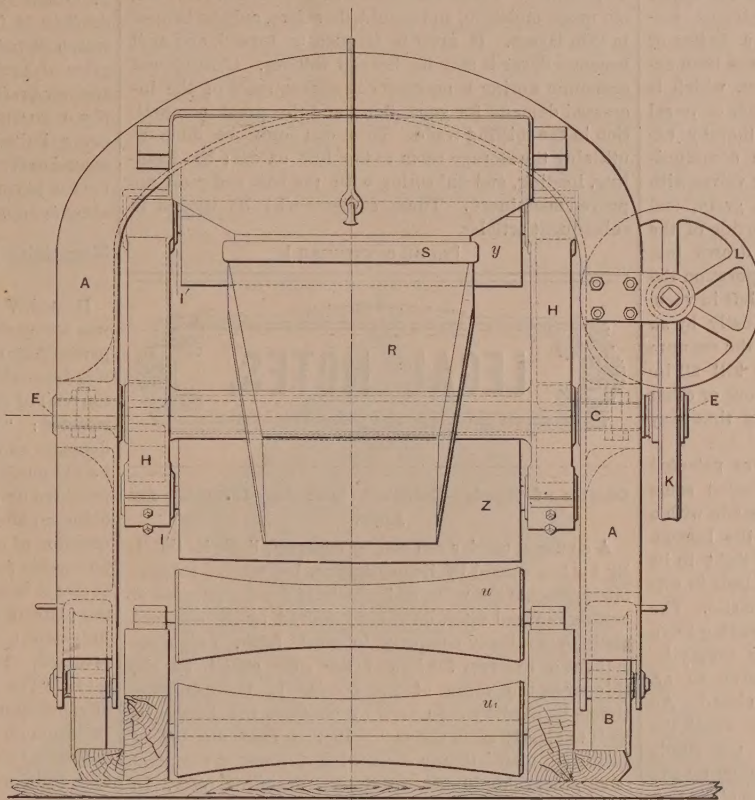


Fig. 121

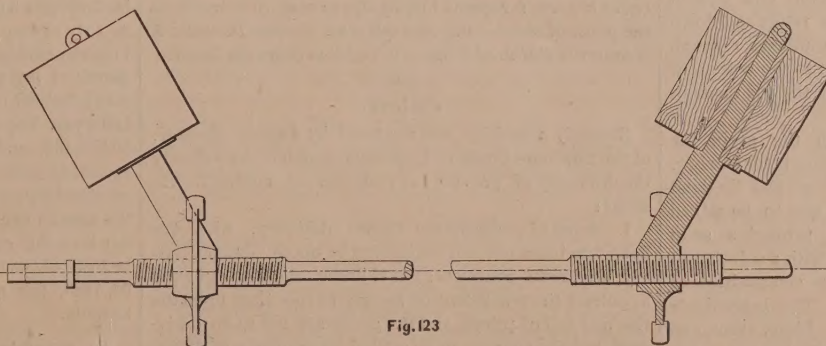


Fig. 123

exhausted and replaced by carbonic acid gas, procured by any of the well-known methods, as, for instance, by the combustion of charcoal or by fermentation, so as to prevent the tendency of grain to vegetate." Another invention consisted in using chlorine, or any other sulphurous gas expanding under a bell, a box, or an airtight cloth or similar apparatus. The grain was to be exposed to the gas in sieves, or in an open work cylinder, working in a chamber filled with the gas. Another invention consisted of driving into the receptacles containing the grain, carbonic acid gas, oxide of carbon, or azote. Air is forced by a blower through pipes surrounding a stove. This air, and apparently with it the products of combustion from the stove, is carried by a pipe to the bottom of the receptacle for the grain, into which it is discharged through a grating. After the grain has been thus treated for a sufficient time, the openings to the receptacle are to be hermetically closed, and the grain may then be kept for an indefinite period. A patent was granted in France in 1855 to Henri Sibille for a method of preserving grain, of which the follow-



which the mass is so distributed that if decay commences at any point it must extend to a very great distance in order to affect any considerable portion of the mass, and therefore its progress must be slow. By thus removing the center the mass is also distributed in a body of less than one-half the thickness it would otherwise be, and thus it is believed the tendency to decay is in a large degree arrested."

The vacuum principle seems to be the subject of more patents than any other. In 1863 a patent was granted in France to Henri Adrien for an invention which related to the process of preserving grain and flour by "producing a vacuum more or less perfect in the cylinder or receptacles which contains the grain, such cylinders being of sufficient strength to bear the external pressure of the atmosphere." The apparatus employed to produce the vacuum consists of a boiler or vessel hermetically closed, and from which has been expelled the aeriform contents by a jet of steam, which is afterward condensed by applying to the boiler or vessel cold water externally. The vessel being thereby exhausted of its aeriform contents, is placed in communication by means of pipes and suitable taps or valves with one or more of the cylinders containing the grain, and as soon as the passage is open a principal portion of the air contained in the preserving cylinders is drawn into the exhausted boiler, and by repeating the operation the substances in the preserving cylinders are left in vacuum, which may also be produced mechanically by an air pump. The effect of the application of the vacuum to reservoirs containing grain or flour is to kill all insects and prevent fermentation and spontaneous or other combustion, causes which in a short space of time may destroy immense stores of grain.

The method of preserving grain which was patented by George Spencer in England in 1869 attracted some attention at the time. It consisted of silos made with a man-hole at the top, and a delivery valve at the bottom. The valve was a sliding one and worked air-tight in its seat. The cover was made with a lip which beds in soft metal, filling a groove in the other part of the silo. The cover may be made with two pipes, one leading to an exhaust pump, and the other to an apparatus supplying nitrogen. These tubes have a common valve so arranged that either or both can be opened or closed. An outer cover has an opening therein through which the valves can be examined without removing the whole cover. To supply nitrogen air is drawn through retorts filled with spongy iron, iron filings, etc. The air is first passed over a deliquescent salt to dry it. The retorts are arranged so that the air is made to pass through the whole series. They may be side by side, separated by partitions, with openings alternately at top and bottom so that the air is drawn up through one retort and down through the next, or they may communicate through pipes leading from the top of one retort to the bottom of the next. A special air pump for driving the gas through the grain is used.

Many have mixed powders through the grain for cleaning it, destroying weevils, improving it for sowing, etc. C. T. Balouchard obtained in France and England a patent of this nature. The powder was to be mixed with the grain and the whole passed through a smut machine, or the grain could be treated with a solution of it or mixed with it in a dry state. The composition of different powders varies considerably. The ingredients of Balouchard's patent are as follows: Lime, alum, carbon, clay, wood powder, sawdust, salt of tartar, or tartaric acid, bay salt, rock salt, sulphate of soda, carbonate of soda, sulphate of copper, sulphate of iron. These are combined, two or more together, in different proportions. Lime and clay are also enumerated. Another method for treating and preserving grain was patented by David Johnson in England in 1872. In his specification he says: "The grain, which may receive a preliminary washing in any ordinary apparatus, is delivered to the first of a series of tanks, each containing a worm and arranged so that they feed one into another in succession. The tanks are filled with water, solutions of caustic soda, lime, hydrochloric, sulphuric or other acid, so that the grain is treated in succession by the different agents, and receives a washing with water intermediate of its treatment with these agents. The grain is passed from the last tank to a centrifugal dryer, and thence to a chamber heated by a furnace filled with fumes of burning sulphur. In this chamber a number of inclined shelves are mounted on a frame which is vibrated by a cam, so that the grain falls from one to the other until it reaches the bottom. A current of air is driven through

the chamber by a fan." We give these methods for what they are worth. They may be the means of suggesting something different or better, as we find that each year more and more of the grain is stored in small elevators in small towns.

It must be remembered that grain stored in floors in ordinary granaries requires great care, particularly when it is left there any length of time, so that it is quite important that those in charge should be thoroughly familiar with every method of preservation. No granary or elevator where grain is to remain on storage for any length of time should be situated in damp places or in the vicinity of trees. A constant draft should be maintained, except in wet weather, and plenty of light should be provided. Fresh-harvested wheat contains, as a rule, too much moisture, and should, therefore, only be heaped in thin layers. It must be frequently turned, and as it becomes dryer it may be heaped thicker. Careful and economic storing is necessary in consequence of the increased demand for good flour, and the great competition in the milling trade. This can only be done by utilizing the storage room to the full extent; by handling, loading, and unloading with the best and most approved machinery. These subjects will be treated in subsequent articles.

[TO BE CONTINUED.]

## LEGAL NOTES.

### Carrier of Goods—Contract Limiting Liability for Loss.

A common carrier can not, by contract, limit its liability for loss caused by its negligence, but when a shipper misrepresents the value of his articles for the purpose of getting reduced rates, he will be bound by a contract, made by a railway company in good faith, fixing the amount of recovery for loss at the sum stated by the shipper as the value of his goods. If the company claims its liability is so fixed by contract the burden is on it to clearly show the fact. In this case the bill of lading stipulated that in case of loss the cost at the point of shipment should measure the amount of recovery. In the bill also were letters and figures shown to mean "leaks and outs excepted, \$20 railroad valuation." Shipper did not know they were in the bill, neither did he know their meaning. The court held that shipper could recover for goods lost by the carrier, their value at the point of shipment.—*Rosenfield vs. Peoria, Danville & Evansville Railroad Company, Indiana Supreme Court.*

### Futures.

Recently a decision was rendered by Justice Fenner, of the Supreme Court of Louisiana, which reveals clearly the difficulty of proving a violation of contract. He states:

1. Sales of property for future delivery, with the bona fide intention and obligation to make actual delivery, are lawful contracts; but if under the form of such a contract the real intent be merely to speculate upon the rise and fall of prices, and the goods are not to be delivered, but the contract to be settled on the basis of difference of prices, the transaction is a wager and is non-actionable.

2. In order to affect the contract the alleged illegal intent must have been mutual, and such intent by one party, not concurred in by the other, will not avail.

3. The law presumes lawful purpose until the contrary is proved, and when one party charges illegal intent the burden of proof is imposed upon him.

4. The validity of the contract depends upon the state of things existing at its date, and is not affected by subsequent agreements under which the parties voluntarily assent to a settlement on the basis of differences.

5. The mere fact that at the date of his contract the vendor had not the goods and had made no arrangements for obtaining them, and had no expectation of receiving them unless by subsequent purchase, does not suffice to impair the contract. The contrary doctrine once announced is now thoroughly overruled.

6. It follows that the failure to identify the particular goods sold does not affect the matter, because the sale is not of ascertained articles but of articles of a designated

kind, quantity to be selected thereafter, which is a lawful contract when the obligations are reciprocal.

### Draft—Authority of Drawer.

O, a wool dealer in San Francisco, consigned 154 bales of wool to M, a wool commission merchant in Boston. M advanced money to O, leaving, at O's estimate, a value of \$3,800 due him; but, according to M's estimate, \$3,000. O telegraphed for further advances, and M, on March 27, 1883, telegraphed O to draw for \$1,500. O then asked if he would not accept a draft for \$2,000, and M replied, on April 3, advising him to sell, and directing him to draw for \$2,500 if he decided to sell, and, if not, to draw for not over \$1,500. On receiving the telegram of March 27, O took it to his bank and obtained discount for a draft on M for \$1,500, but gave M no notice of the draft, which M paid on presentation. On receiving the telegram of April 3, O's clerk took it to the bank and got another draft for \$2,500 discounted, which M refused to pay or accept. The court held that the authority to O being limited, the bank must be held to have taken the second draft on its own risk, and that M was not liable for the payment thereof.—*Nevada Bank vs. Luse, Massachusetts Supreme Court.*

### Negotiable Instruments—Partial Failure of Consideration.

D sued W upon a bill of exchange, and the defense was set up that the plaintiff had notice that there was a partial failure of consideration, and the amount thereof was demanded in reduction of the plaintiff's claim. On the trial of this case (*Davis vs. Wait*) the jury were instructed: "The plaintiff having notice of the claim of damages and defects before he purchased the draft, if he did purchase it, would not affect his right to recover, provided he purchased it before it became due. There being no allegation of fraud in obtaining the bill, the question of notice is not material, provided the draft was purchased for value, in the usual course of business, before it became due." Upon this charge the jury gave the plaintiff a verdict, and the defendant carried the judgment to the Supreme Court of Oregon, where it was reversed. The Chief Justice, Waldo, in the opinion, said: "The answer was a good defense. Partial failure of consideration of a bill of exchange may be set up to an action on the bill, and the defendant may recoup his damages, though they be unliquidated. If the indorser take a bill with notice of the failure of consideration his right to recover can not be superior to that of his indorser."

The quantity of wheat sent abroad from this country in July was 3,604,125 bushels, against 6,938,403 bushels in July of last year; in August the quantity was 3,187,698 bushels, against 12,382,943 bushels in the corresponding month of last year; in September the quantity exported was 3,738,467 bushels, against 9,609,933 for September last year. The total for the three months of this year was 10,530,290, against a total of 28,921,278 for the corresponding period in 1884. There was also a falling off of about 25 per cent. in the exports of wheat flour. At the rate shown for the three months ending on September last, the exports of wheat for twelve months would be only 42,000,000 bushels, while in the year ending June 30, 1885, the quantity exported was nearly 85,000,000 bushels.

To separate legitimate trading for future delivery from the illegitimate, or gambling transaction, is one of the difficult problems of the present time. No one can deny the right of an importer who has purchased a cargo of coffee to buy and sell it as many times over as he may elect between the time of purchase and the date of arrival. A merchant may make a sale of refined oil today for export in March next. He may purchase in December crude oil against such sale, but finding he can dispose of it in January at a handsome profit, do so. Or he may trade in crude oil against his sale of refined as often as he chooses. Who can gainsay the legitimacy of the operation? We believe that on all Exchanges that are great centers of speculative trading, the buyers of options have the right, if they so elect, to call for an actual delivery of the merchandise represented by the certificates held. This is frequently done by heavy operators who have caught "the crowd" selling "short," or disposing of fictitious merchandise and knowing that a demand for the property could not be met, they force a settlement, generally at their own figures.—*American Grocer.*



## MONTROSS PATENT METALLIC SHINGLES.

Among the many decided improvements tending to the ornamentation and protection of building structures of every description, the use of metallic shingles occupy a deservedly high place, and as their advantages become more generally understood and appreciated their manufacture and use become more extended and common.

For simplicity, efficiency and durability, the MONTROSS PATENT SHINGLE, manufactured by Messrs. E. Van Noorden & Co., of Boston, an illustration of which is here given, is claimed to be unsurpassed, and as it is the cheapest shingle manufactured it is not surprising that the extensive facilities of this house are severely taxed to meet the demands for these goods. The use of metal shingles is not experimental, having been largely applied for eight years, and wherever introduced have become the favorite roofing among builders; being, in fact, a modification of the good old diamond roofing, as applied by tinsmiths, simplified in applying and strengthened and beautified by stamping. Indeed they are far superior. They are less than one-sixth the weight of slate, requiring a lighter and less expensive superstructure. Being wrought iron, they readily conform to the shape of the roof, while slate will not. The objections to slate roofs are the freezing and thawing of water underneath or in the shaley or porous parts, breaking and shelling them off the enlargement of nail holes by constant working, loosening them, and falling bricks from chimneys, and other accidental causes, breaking them, all resulting in leaks or necessitating expensive repairs. Heat from burning buildings adjacent causes slate to crack and fall off, and especially if water is thrown on them while hot. This leaves the sheathing exposed and is dangerous. Metal Shingles are free from all these objections, may be dented without causing a leak, or if perforated, a new shingle can easily be substituted for an old one or the hole soldered. Exposed to fire the only injury is the burning of the paint, and they cool off rapidly, retaining their original shape.

Compared with tin roofing, they are claimed to obviate the objections of contraction and expansion; also the dampness and rust upon the under side, by lack of ventilation. Compared with wooden shingles, the advantages are too obvious to require mention.

In applying these shingles they have a uniform lap on all sides when laid (see cut), the lower edges of upper shingles lapping over the top edges of lower shingles as far as the dotted lines (A A A), the corrugations in the upper edges of the lower course fitting closely to those of the lower edges of the upper course. The point or lip (C 1) engages with the shingles on each side below, through the openings (C 1), covering all nail heads and effectually interlocking, when completed, the entire roof. The double ribs form a double obstacle against snow or rain drifting through.

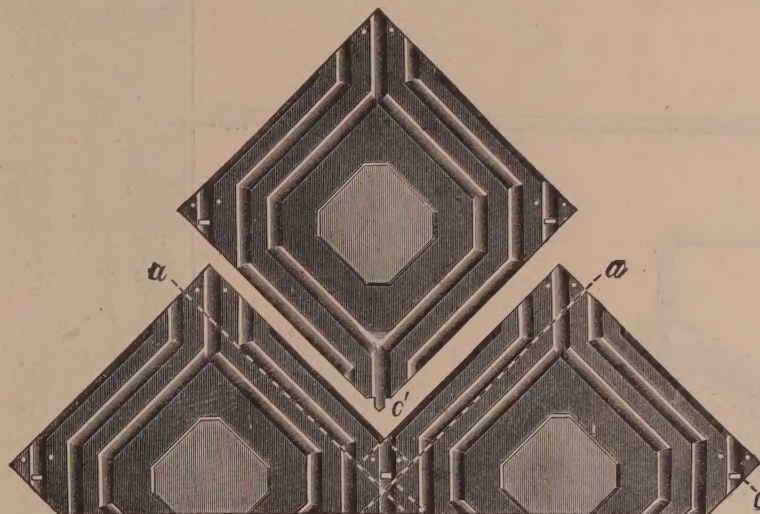
It is stated that the wheat shipments from California, Oregon, and Washington territory give employment to more than 400 sailing vessels every year.

Leo Wetz, a prominent horticulturist of Ohio, and member of the State Board of Agriculture, who went abroad several months ago, has returned, and is in Washington. He brought back with him four varieties of what the Russians consider their very best milling wheat. He also brought the information that the Russians are devoting themselves with great earnestness to wheat raising, and with improved methods and these new varieties of seed, they expect to regain their lost prestige, and to supply the European wheat markets to the exclusion of the American product. Mr. Wetz says that wheat raising is the great question in Russia now. The farmers there are even giving up rye to devote their lands to wheat. Mr. Wetz brought over quantities of Russian oats and barley of varieties which he thinks are better than the farmers here have. The Agricultural Department at Washington City will take seeds and try them, making general distribution in due time if the results of experiments are encouraging.

## TRADE IN THE WINTER WHEAT SECTION.

[Special Correspondence AMERICAN ELEVATOR AND GRAIN TRADE.]

KANSAS CITY, Mo., Dec. 7.—The general courses of prices of all cereals have been downward during the month. No. 2 red wheat has declined from 73c to 69½c. The highest point reached during the past month has been 75½c, on the 10th of November, and the lowest was 68c, on the 28th of the same month, the extremes being 7½c apart. No. 2 soft has declined during the same time from 85½c to 81c, 4½c. The highest figure was reached on the 18th ult., when sales were made at 86½c. Within a week, however, prices fell off 6½c, to 80c, on the 25th ult. No. 3 red tumbled down from 60c to 56½c. The lowest price paid was on Dec. 2, 50c, being a decline of 11½c from Nov. 17, when sales were made at 61½c. White corn and No. 2 have also followed the general downward movement, though to a less extent. No. 2 descended from 28½c to 27c, and white from 30c to 27c. There has been one of those dull trade months for cereals experienced which is calculated to make the average commission man shake in his boots, and look about for some satisfactory explanation. The Minneapolis millers were finally hit upon as the moving, primitive cause. These malcontents the week be-



MONTROSS PATENT METALLIC SHINGLES.

fore last were short, and then put down their bids three cents. Last week they were generally believed to have gone long, and they have advanced their bids four cents. While the above may be true, yet the importance of the same is overrated. There are inexorable laws, well-known and well defined, which govern eventual prices and always dictate unerringly the path of values during any extended period. A Vanderbilt might buy our crop, and put wheat to two dollars, but he could not hold it there. Of course a dozen of the great Chicago dealers, acting together, sell enough wheat in twenty days to depress quotations to fifty cents; but they could not keep them there. They must rise as irresistibly as the tide.

Receipts of wheat at this point are growing excessively light. The withdrawals are now exceeding the receipts. The reserve in states adjacent to this point is notoriously less than it has been for a decade. The export demand, although moderate, exceeds that of 1884, when prices were sixteen cents lower. These are the straws which go to show which shall be on top, the bulls or bears. During the month there have been 232,043 bushels of wheat received into elevators at this point. There were 639,013 bushels received during the same time in 1884. Thus it can be easily seen that locally there is no reason why values should depreciate. When, then, the total receipts of 1885 to date, 3,474,835 bushels, is compared to that of the corresponding time last year, 5,778,669, the question becomes settled at once that the decrease in values at this point does not owe itself to any local cause. To what it is due is an enigma which we cannot attempt to solve. There are in the elevators here at present 940,751 bushels of wheat in store, 53,006 bushels of corn, 8,426 bushels of oats, 4,946 of rye, and 2,059 of barley.

An election of the Board of Trade will be held at the hall of the association this evening for the purpose of

voting on a proposition to empower the board of directors to sell and transfer the real estate of the association to the Exchange Building Association, of Kansas City. Polls were open from 10 o'clock A. M. to 4 P. M.

The flour mills are going slowly, running hardly to a half of their capacity. During the month, with here and there a splint, the market has been lifeless, as a rule. Values, in consonance with wheat, have fallen off five to ten cents per hundredweight. Consignments of established brands in car lots are sold per such as follows: Fancy, \$1.85@1.95; choice, \$1.55@1.60; family \$1.35@ \$1.40; XXX, \$1.25@1.30; XX, \$1.10@1.15; X, 95c@ \$1.00; superfine, 85@90c; fine, 75@80c. Well-known brands from city mills 30@40c higher on fancy, choice and family. Buckwheat out of store, per barrel, \$7.00; oatmeal, \$5.00; Graham, per sack, \$2.00; rye, \$1.60@1.80. In millstuff, bran, per hundredweight, sells at 45c; sacked, 53c; No. 1, 47c; sacked, 55c; fancy white, 60c; sacked, 68c.

At the corner of Twentieth and Holmes streets Mr. S. C. Lee has almost finished a first-class elevator for grain, which will have a capacity of between 70,000 and 90,000 bushels. The elevator was constructed in that part of the city as it is believed that before long the Chicago & Alton Road will run its main track over the Belt Line and construct a freight depot south of town.

Before another year has passed there will be a 400-barrel flour mill in the East Bottoms, near the glucose building. Mr. E. P. Allis has the contract, and promises to put up one of the best flour mills in the state.

The Morse Engineering Co., at 1306 Union avenue, have had more work to do the past year than ever before. Under the efficient management of A. M. Morse, Esq., their works have become a most important adjunct to the elevator and milling interests of the Southwest.

Mr. Charles Loveless, of Wyandotte, Kan., has sold out his entire milling establishment to the irrepressible Mr. J. McAlpine, who proposes to remodel and greatly improve the quality of machinery and desirableness of the flour.

The Heims Brewing Co. have just had a number of the improved Bailey Elevators placed in their brewery. By means of these the handling of barley and malt is greatly facilitated.

It is said that the Kearney (Mo.) Milling Co. will enlarge their capital the coming winter and greatly enlarge the capacity of their mills by the addition of rollers to their burrs, which, while doing work up to the average of such mills, do not give satisfaction to all classes of trade.

The old burr mill at Rosier, Mo., owned and operated by Mr. H. White, has all it can do in keeping abreast of orders. A good many improvements are being made in it.

Mr. E. H. Fenton, the omnipresent patent-right man, is flickering between here and points in Kansas. He is one of the best examples of perpetual motion that can be imagined.

Mr. R. Howe, of Dallas, Mo., is talking of making a stock company and putting rollers into his mill, which is situated in one of the best wheat districts in the state.

Messrs. W. Z. Smith & Bros. have just taken charge of the Grange Elevator at Ellsworth, Kan.

Mr. Cook has given out the contract for a first-class elevator, to be used in connection with the "Diamond Mills," which, in company with Mr. Wallace, of Leavenworth, Kan., he acquired possession of a fortnight since. Mr. Wallace is the best known elevator builder in the land.

A pulley thirty-four feet in diameter and weighing eighty-three tons, has just been made in England. It has grooves for thirty-two ropes, which, together, will transmit 1,280-horse power, and the rim will have a velocity of more than a mile a minute.

The exports of wheat to Great Britain and the Continent during the past three months have been some 14,000,000 bushels less than during the same period last year. The exports of flour during the same period decreased about 375,000 bushels as compared to last year.



## WOLCOTT'S GRAIN DRIER AND COOLER AND THE WOLCOTT CAR DUMP.

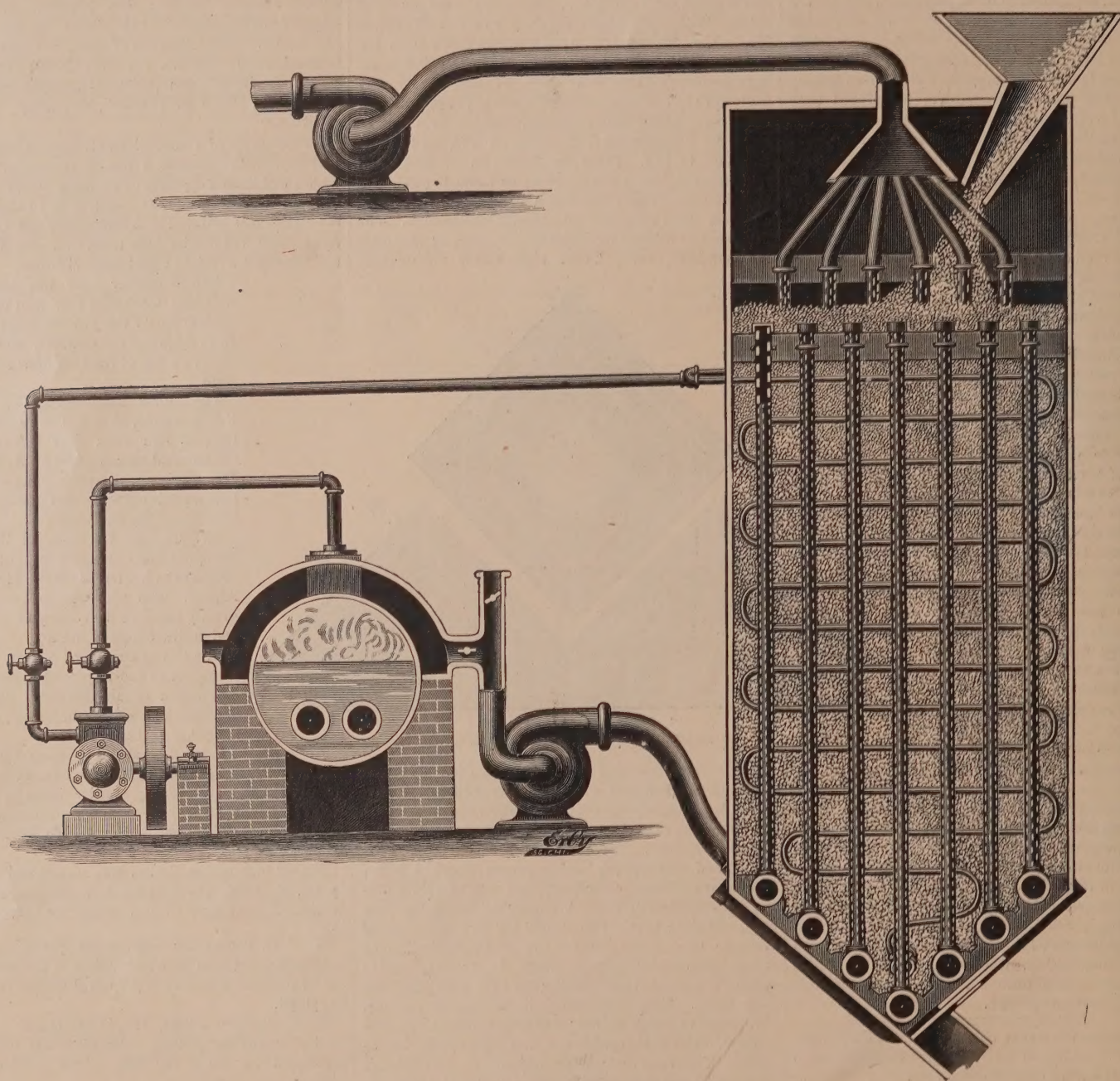
The Wolcott Grain Drier, illustrated on this page, is a new invention, and consists of two separate systems of vertical perforated air tubes passing through a grain bin and through the grain in the bin. The one system is for the inlet, the other for the exit of the air. The air inlet tubes are open at the bottom end to receive the air, and closed at the top to prevent the air from escaping directly from the tubes into which it enters. The air exit

pressure on the engine, the exhaust steam of the latter may be carried through all parts of the bin as described above and shown in the accompanying cut. By this device the heat for drying will cost nothing; but will do most effective work in removing the moisture from the grain. At the same time the free circulation of the air through the grain will prevent injury to the quality of same by scorching. If additional heat to that supplied by the exhaust steam of the engine is required, it may be secured cheaply by a hot-air jacket around the exposed parts of the boiler. To prevent overheating cold air may be admitted as required.

Persons desirous of obtaining the Wolcott Drier or the Car Dumper, or wishing to purchase an interest in the patents, are requested to apply to A. WOLCOTT, Wolcott, Ind.

### OUR SOUTHWEST LETTER.

The year is drawing very quietly to a close without any very startling new developments of any kind connected with the grain and elevator trade of this section. The early anticipations of the bull speculators in wheat have never been realized, and it now looks as though



WOLCOTT'S GRAIN DRIER AND COOLER.

tubes are adjacent to the inlet tubes. They are not open at the bottom, but only at the top, to allow the air to escape, which is introduced by the inlet tubes.

Each set of tubes has many slitted perforations through their sides, so that the air may pass from the one to the other through the side openings. In so doing it must, of course, pass through the grain. The air, which is introduced into the inlet tubes by a blower, passes through the side perforations to the grain; and after fulfilling its object it passes into the exit tubes through their side perforations, escaping at the open tops of the tubes. An exhaust fan at these tops would greatly add to accelerating the air current, and the combined action of the blower at the inlet tubes and the fan at the outlet tubes will cause the circulating air to reach equally all parts of the grain, through which it may be driven with great force. The air may be hot or cold, as desired.

Hot air may be supplied from any source. By an arrangement of steam pipes large enough to prevent back

This device with hot air will be an effective eradicator of weevil in wheat.

The illustrations on the next page represent Wolcott's Car Dump for unloading grain, coal, etc., from cars. A section of the railroad track is framed on a longitudinal central piece of iron or timber supported by journals or bearings easily moved. A car loaded with grain, having been run on a track so constructed and a door opened, may be unloaded by simply tilting the track. Two-thirds of the grain will at once run out; the rest can be easily removed; and no steam shovel it is claimed will do this work as efficiently or cheaply. The tilting of the track and car can be effected by the slight power of a single man with crank and gearing, as there is a counterpoise weight attached to the track beneath which, being about equal in weight to the car, balances it. This counterpoise may be of the cheapest materials and the simplest construction, a box or trough filled with stone being as good as anything.

they never would be. Kansas has evidently raised the most tenacious short crop ever grown in any state before. The millers are grinding away at it, the dealers are shoving it into Kansas City and Atchison, and they in turn are pushing it eastward all they can. The Missouri Pacific and "Frisco" railroads run south of Kansas City with all they can get for St. Louis and other markets, and still the stuff is increasing all the time. Nobody here seems to want it. There is more wheat in store in Kansas City than there ever was before, and still, slowly but surely, it is piling up. The millers of this locality have no use for it; fact is, the most of them have more now than they want at the price they paid for it. One leading mill owner at Leavenworth told me a few days ago that they had wheat enough to last them until next harvest without buying another bushel.

Still, for all that, Kansas did not grow any wheat last year, or next to none.

The expansive qualities of the "seven loaves and a



few little fishes" bear no comparison to the wonderful elasticity of the last Kansas wheat crop.

Well, it is quite satisfying to know that the danger of a bread famine has passed; we are sure to pull through now until another crop, with at least a government ration of bread per capita.

The growing wheat goes into winter quarters in a fine and healthy condition; of course, though, a long and severe winter, such as we had last year, may do considerable damage; however, it is too soon for even the wildest among the tail-erected bulls to bet on that.

I was recently a good deal surprised to learn that a very large area of country in the southeast part of Kansas and the southwest portion of Missouri were short in corn. They seemed to have had too much wet weather during the growing season. In many localities they do not expect to have more than enough, if enough, for home consumption. The reason of my ignorance of the above fact is, I have been operating almost exclusively in the north half and southwest part of the state, where the corn is universally good, and did not visit the locality referred to until quite recently.

There have been a number of changes in and around the Board of Trade building lately. Minter Brothers

the middle, and now they are sailing in for all it is worth.

S. C. Lee has about completed his elevator, but is having trouble about his side-track. The Belt Line Co. agreed to put in the track, but it seems the city "dads" kicked, and so Lee had to appeal to the people and through them to the council, in the form of a numerously-signed petition. I presume he will come out all right.

The old "Diamond Flour Mill" is being converted into an oatmeal mill, and a good-sized elevator is being built in addition to it.

Throughout the country there have been no new houses projected for several weeks.

W. R. West & Co., of Glasco, Kan., expect to get hold of the elevator at Lindsay, and if so will fit it up for shelling corn at once. They have been having a heavy run of corn this fall.

Greenleaf & Baker, of Atchison, have their Warwick house well under way, and expect soon to break ground for a new one at Republic.

By the way, I called on the above firm about a month ago, and Mr. B. had the pigeon holes of his desk full of machinery circulars, apparently from every part of the

Hope is a town on the Salina extension of the Missouri Pacific Railroad.

From present indications there will be an enormous amount of railroad building in Kansas next year. New lines and new branches of old lines are projected in almost every direction.

ABERNATHEY.

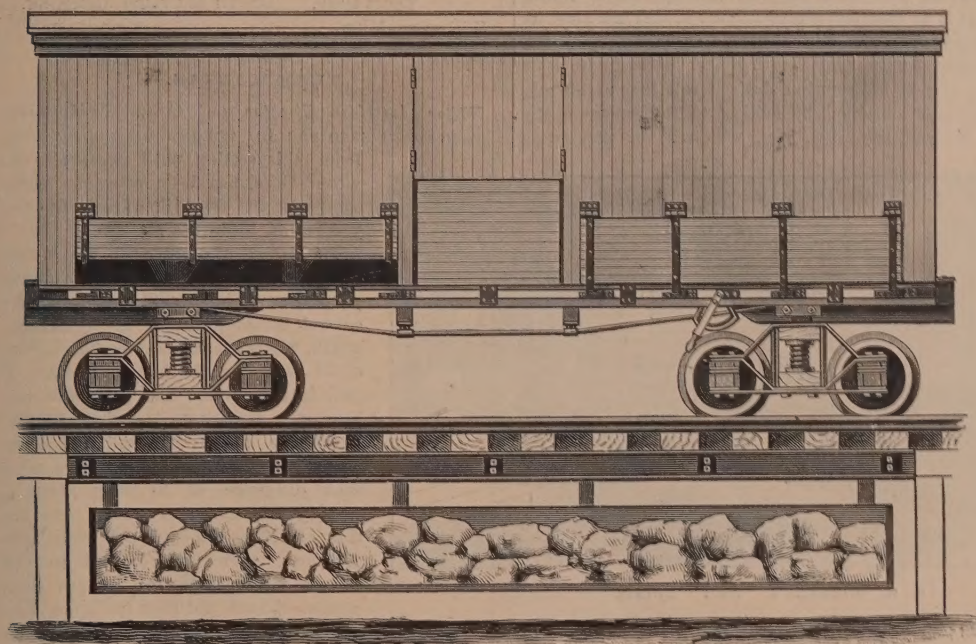
Kansas City, Dec. 10.

## ELEVATOR BUILDING IN THE WEST.

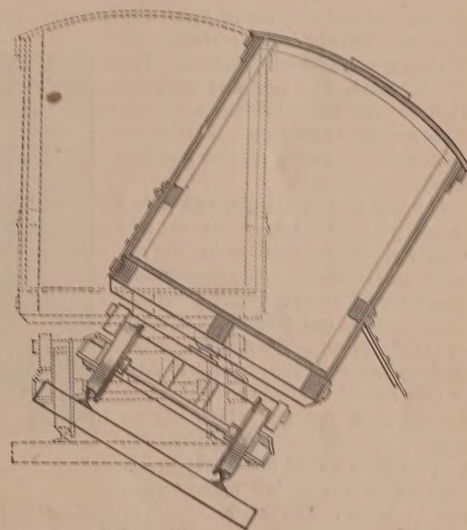
M. F. Seeley, of the firm of elevator builders, Seeley, Son & Co., Fremont, Neb., was in Chicago the past week, and we took occasion to apply the reportorial pump, albeit the pump is a little rusty, but works sufficiently well to extract large lumps of information.

"The business of elevator building has been good in the West this year," said Mr. Seeley. "Our firm has constructed thirty-six new Seeley Elevators, besides completing thirteen repair jobs. We built new Seeley Elevators at the following points in Nebraska: Weston, Mead, Ashland, Friend, Raymond, Shelby, Elm Creek, Gothenburg, Wahoo, Clark's, North Bend, Pilger, Stanton, Wisner, West Point (2), Creighton, Rock Creek (2), Kennard, Craig (2), Bancroft (2), Oakland (2), Pendar, Exeter, Guide Rock, Morton, Valparaiso, Benton, Arlington, Herman and Wakefield. Also an elevator at Ellsworth, Kan.

"As the season opened rather late, we were kept busy



THE WOLCOTT CAR DUMP.



WOLCOTT CAR DUMP, SECTIONAL VIEW.

built them an office down at their elevator, and moved down there, but so accustomed were they to the music of the "ticker" that they took it along with them, evidently fearing they could not sleep good nights unless enlivened during the day by the music of the song they had listened to so long. And then, too, I guess they wanted to keep an instantaneous run of the market, because, as Max says, "If I can't sell the real stuff that we have in the house, I'll sell short; bound to sell anyhow." Max was a "die in the last ditch" bull some time ago, but he has changed a little and thinks that

"He that fights and runs away  
Will live to fight another day."

The old apartment of Minter Brothers is now occupied by Simonds & McCoy, one of the most reliable commission firms in the city.

Lee & Christie have moved down from the second floor into the southeast corner of the building, first floor, fronting on Delaware street, in the office formerly occupied by Mead. They do a general commission and option business, and from under that cloth plug of his Charley Lee beams upon all customers and visitors in a manner suggestive of

"Come into my parlor  
Said the spider to the fly."

But Charley is no spider by any means; he is a first-rate good fellow, and has a nice place, with chairs and lounges, newspapers and periodicals, and all a visitor has to do is to go in and make himself comfortable and at home.

A new firm, Norton & Worthington, recently leased the two offices in the southwest corner of the building, second floor, converted them into one, spread a blackboard all the way across the room, planted a ticker in

habitable globe. He remarked that those things had swooped down on him all at once, and couldn't understand how it had become known that they had ever dreamed of, talked of, or intended to build an elevator, inasmuch as they had never said much about it themselves.

There happened to be an AMERICAN ELEVATOR AND GRAIN TRADE of the previous month in one of the pigeon holes; I pulled it out, turned to my letter, and the secret was out. Mr. B. thought the AMERICAN ELEVATOR AND GRAIN TRADE must have numerous and attentive readers.

They had quite an annoying mishap at their Atchison elevator a few days ago. The employes undertook to make the corn sheller swallow a car link; the sheller rebelled, and when the conflict was over it was in no condition to shell nubbins, much less stout ears of corn. The makers were wired at once for a new cylinder, but unfortunately their last cylinder in stock had been shipped that morning, consequently the elevator parties had to wait until a new one could be cast and fitted up, which, including Sunday, involved a loss of four days to them, and all the time cars of ear corn piling up on them. The moral to this story is that when people are disposed to now and then make their shellers swallow indigestible food, it is better to keep an extra sheller stomach or two on hand.

Goodnow & Wickham, a new grain firm of Salina, Kan., recently took hold of Miller's Elevator, at that place, and had it fitted up with steam power, put in a corn sheller, and are now prepared to do a large amount of track shelling, also prepared to do their share of the local business from farmers' wagons.

The same firm have recently broken ground at Hope, and are rapidly pushing forward a new elevator, which will soon be ready for operation.

after outdoor work was possible, and we found time to use up 130 cars of stone, twelve cars of brick, 6,000 to 7,000 fire brick, and nearly 150 cars of lumber. We put from 600 to 800 kegs of nails out of sight, and used from 700 to 800 gallons of paint.

"In the equipment we used 12,822 feet of rubber belting (or nearly two miles and a half), and 6,714 elevator buckets. We placed twenty steam engines, twenty boilers and sixteen horse powers. We put in sixty-eight Seeley Turnheads and sixty-eight Seeley Boots. The pulleys numbered 256 and the elevator bolts 23,650.

"Of shafting, our year's work required 1,358 feet and 490 pairs of boxes and 263 collars. We put in forty-eight pairs dump rollers and forty-six sets of dump irons, fifty-nine pairs of flanges. Of iron rods we used 28,000 pounds, which would reach a length of five miles.

"Besides all this, the building of these elevators required 5,987 pounds of indicator rods, 7,000 pounds of iron washers, 1,342 joints of iron spouting, or over a mile in length, 588 receivers, sixteen iron pans, weighing from 27,000 to 30,000 pounds, thirty scales, 6,000 bolts, 800 bags, 150 gross of screws, fourteen corn shellers, an equal number of cleaners and twenty-five separators."

"What are the prospects for next year? Well, already there are plenty of indications that next year will be better than the one passed. People have got over the idea that there is going to be any panic or long period of depression; and had it not been for the fear of this our business would have been much larger the past season. But the items that I have read you will indicate that it was a pretty good year for elevators as it was."

The Howe Scales have all the latest improvements. It is true economy to buy the best. Borden, Sells & Co., agents, Chicago, Ill.



## S. E. WORRELL'S "WEB" DRIER.

The tendency of the present business man is strongly toward more economical methods. Competition in the different lines of trade has become so strong that the former percentage of profits has become largely reduced and in many instances almost wiped out. Although doing a large volume of business, many proprietors find at the end of the season that they have made no money. This state of commercial affairs will probably exist for an extended period into the future, and we must prepare ourselves accordingly. Manufacturers, for the above reasons, are forced to turn their attention to the question of how to obtain a larger return from their refuse or waste products; in some establishments the saving in this matter alone can be made to yield quite a handsome income.

The accompanying illustration shows a new invention, for which a patent has been allowed, for drying brewers' grains, distillery slops, starch refuse and substances of a similar character which from their glutinous nature cannot be successfully operated upon by existing drying machines. It is also well adapted for damp grain of all kinds. The patentee, Mr. S. E. Worrell, who has had an extended experience with drying machinery, and is the inventor and maker of a combined drier and cooler, which has been very successful on grain, has made extended drying tests of the above-mentioned materials on his cylinder machine, but the results were not satisfactory from two causes; first, the substance "balling," and, secondly, adhering to the hot metal surfaces. The "Web" drier was designed with the view to and does entirely overcome these serious objections. This is accomplished by acting on the material without agitating it.

The machine is simple, and a few words with the aid of the cut will clearly explain its construction and operation. It consists of an endless web of galvanized wire cloth drawn over two large rollers, one journaled at each end of the drier. The fire box is underneath in the middle; from both sides of this extend a number of cast-iron heating pipes through which the hot gases of combustion pass into the soot boxes at each end of the machine, and from thence into the two upright pipes seen in the cut. The entire furnace is covered by iron dust shields to prevent the scorching of the small particles of the material being dried that may drop down through the wire cloth. The whole heating arrangement is surrounded by a brick wall, which is an excellent non-conductor of heat, therefore well adapted for this purpose. The top of the apparatus consists of a close-fitting sheet iron cover, to which is connected the suction spout of a powerful exhaust fan. This blower greatly accelerates the upward movement of the hot air, which it will, of course, be understood is the drying agent, and it has been clearly demonstrated that this is the best and most economical agent for removing moisture from damp material of a granular nature. The numerous small openings in the bottom of the brick work are gates for regulating the distribution of the air.

One of the most important features of this drier is the novel construction of the furnace, which, while it presents an unusually large amount of heating surface, is provided with means for producing a regular radiation of the heat, and is so arranged that the soot can be removed from the interior of the heating tubes while the machine is in operation. Any kind of fuel can be used. A very effective system of drainage is provided for disposing of the condensed water that collects on the interior of the iron cover. The action is continuous and only requires the attention of one man for supplying the fuel. The inlet and discharging openings are furnished with self-closing gates, and no hot air can escape without doing its work.

Motion is transmitted to the endless web by the worm gearing shown at the right end.

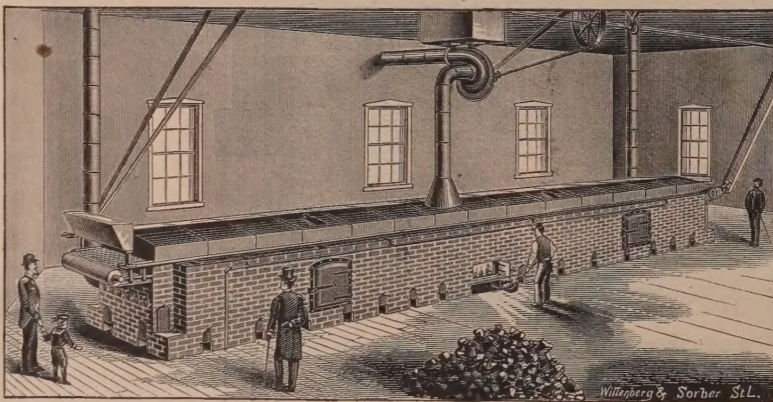
In operation the material to be dried is supplied to the hopper seen at the left of the cut; in the bottom of this hopper is a device for disintegrating and spreading the damp material to an even thickness across the entire width of the upper wire cloth; this carries it into the machine where the drying process commences. This is

accomplished by the hot air being drawn up through the meshes of the web and the interstices in the material, the latter lying in a loose, fluffy condition allows the air to freely circulate between the damp particles, thus absorbing the moisture which is carried up with it and discharged through the blower. The rapidity of this action will be understood by those who know what a great affinity hot air has for water.

The drying process is in this manner continued until the material reaches the opposite end of the machine, where it is discharged in a thoroughly dry condition. Of course the damper the substance the longer it must remain under the influence of the hot air currents, and *vice versa*, so provision is made for graduating the movement of the web to the requirement of the substance being dried. A revolving brush is placed under the discharging roller for removing any particles that may adhere to the wire cloth.

This machine is very durable, no part being subject to much wear except the web, which can be occasionally renewed at small expense. A number of "idlers" are supplied for supporting the weight of the wire cloth and its load, and means are provided for taking up the slack in the web while the drier is in operation. While the cut is an excellent representation of this machine, its great reduction prevents showing a number of small but important details.

Any further information desired relating to this machine can be obtained by writing to the inventor, Mr. S. E. Worrell, Hannibal, Mo., who will be pleased to



S. E. WORRELL'S "WEB" DRIER.

answer any inquiries from interested parties, and to him such are referred.

A sample of mammoth flaxseed was exhibited on 'Change and attracted great attention. It was raised in Valley Springs, D. T., and the yield is said to be twenty-six and a half bushels to the acre.

A most remarkable as well as mysterious case of faith cure is the subject of city gossip in Newark, Ohio. Miss Jennie Brown, daughter of Thomas Brown, a prominent grain merchant of the place, contracted a severe cold about a year ago, which resulted in consumption. In spite of the best medical aid, she sank rapidly, and the physicians gave her up. It was then that a brother of Mrs. Brown induced the parents of the young lady to allow W. F. Brown, an evangelist, to try a faith cure on her. He prayed with her, anointed her head with olive oil, and the following morning, it is said, the young lady was able to arise and dress without aid and help her mother do the housework; and while a skeleton before, weighing only forty pounds, she is now gaining flesh rapidly, and eats as heartily as a person in good health.

One would say at first blush that the demand for so elementary a necessity as bread would be a constant quantity, not varying much, except with the variations in population. But such is far from being the case. There are other cereals besides wheat, and other food besides bread, and above and worse still, there is a wide margin between actual necessity and solid comfort. The American people, with rare and brief exceptions, have enough to eat, but the laboring poor of Europe hardly know what it is to be well fed. Short rations, with an occasional wolf meal, is more in their line. In the present depressed condition of European industries it is not extravagant to estimate the actual consumption of wheat on that continent next year as 150,000,000 bushels below what it would be if times were good.—*Ex.*

## COMMUNICATED

[We invite correspondence from every one in any way interested in the grain trade, on all topics connected therewith. We wish to see a general exchange of opinion on all subjects which pertain to the interests of the trade at large, or any branch of it.]

## FROM DAKOTA.

*Editor American Elevator and Grain Trade:*—The Brush Elevator Company has remodeled its elevators at Minto and Grafton, Dak., and put in new engines and steel boilers. They have also leased the Hughes & Hersey elevator at Arvilla, which is the largest elevator in Dakota, and are going to remodel it to receive wheat from cars.

Yours truly, BRUSH ELEVATOR COMPANY.  
Stillwater, Minn.

## FROM KANSAS.

*Editor American Elevator and Grain Trade:*—We have to apologize to you for not sending you any news from this section until now; but the writer, Gore, has been away for some time past, and we will endeavor to keep you posted hereafter.

The Atchison grain men are loudly complaining because the Missouri Pacific people are allowing the bulk of the central branch grain to go to Leavenworth, where it escapes competition from other roads for the long haul east. A prominent elevator and grain man was heard to remark to-day that he believed the proper "string" had been found, and that it would be pulled with such diligence as to bring about a remedy very soon that would turn the tide of affairs and start the grain into Atchison, where all the roads east can have a fair play for all eastern shipments. I have not seen for some years

past a time when the receipts of wheat were so small as they are at present, and that which does come in is of an inferior quality.

Corn is moving freely and is in splendid condition. Your ELEVATOR AND GRAIN TRADE, in my estimation, is the best paper for grain news and items of interest pertaining to same that is published.

Business on the Central Branch is picking up rapidly. They are short more than 500 cars now that dealers want to load corn in. The Omaha extension is short about 150 cars. To show you that the grain men of Atchison are justly indignant at the treatment of the Missouri Pacific folks in regard to that Leavenworth matter, I only mention that they shipped two trains via C., B. & Q. R. R., of fifty cars each, loaded with shelled corn for New York, the largest shipment of this kind to the East ever made here. Mr. L. A. Emerson, general freight agent of the Missouri Pacific Road, was in the city Dec. 4, to try to effect a compromise with the Atchison grain men in regard to the discriminations they claimed were made against them in favor of Leavenworth.

The receipts of grain, Dec. 4, on the Board of Trade, amounted to only twenty-one cars. But the railroad records show that the Central Branch alone brought fully 100 cars into Atchison, and the Omaha extension about fifty cars, most of which was rushed through Atchison to Leavenworth, to avoid the pool and competition.

Yours truly, GORE & TODD.  
Atchison, Kan., Dec. 5.

P. Dykema & Son have leased B. Gilbert & Co.'s grain elevator at Moline, Mich.

Shipments from Duluth the past season included 13,458,128 bushels of wheat and 1,149,999 barrels of flour.

Minneapolis millers are credited with covering 8,000,000 bushels of short wheat in this market Nov. 30, at a profit of 6 cents.





Issued on Nov. 10, 1885.

**DRIVE CHAIN.**—James M. Dodge, Philadelphia, Pa., assignor to the Ewart Manufacturing Co., Chicago, Ill. (Model.) No. 330,004. Filed May 8, 1885.

**SELF-LUBRICATING PULLEY.**—Charles Hammelman, Buffalo, N. Y. (No model.) No. 330,234. Filed Oct. 9, 1885.

Issued on Nov. 17, 1885.

**GRAIN BAG FILLER, WEIGHER AND REGISTER.**—L. P. Summers, Peculiar, Mo. (No model.) No. 330,856. Filed March 30, 1885.

**CORN SHELLER.**—Solomon E. King and John H. Gilman, Ottawa, Ill., assignors to King & Hamilton Co., same place. (No model.) No. 330,495. Filed Aug. 20, 1884.

**ELEVATOR.**—Benjamin A. Legg, Columbus, Ohio, assignor to Joseph A. Jeffrey, same place. (No model.) No. 330,792. Filed April 22, 1885.

Issued on Nov. 24, 1885.

**BALING PRESS.**—Frank S. Clark and Joseph A. Bachman, Austin, Tex. (No model.) No. 331,035. Filed March 5, 1885.

**BALING PRESS.**—Peter K. Dederick, Loudenville, N. Y. (No model.) No. 330,877. Filed Oct. 6, 1883.

**BALING PRESS.**—Wilson Gardner, Washington Court House, Ohio. (No model.) No. 331,049. Filed Sept. 12, 1885.

**CAR STARTER.**—William P. Vickery, East Auburn, Me. (No model.) No. 330,946. Filed Sept. 23, 1885.

**CAR STARTER.**—Henry H. Watson, Waltham, Mass. (No model.) No. 331,220. Filed Oct. 23, 1884.

**COCKLE SEPARATOR.**—Frederick W. Howell, Buffalo, N. Y., assignor to Margaret T. Howell, same place. (No model.) No. 331,061. Filed September 20, 1883.

**MACHINE FOR MAKING ELEVATOR BUCKETS.**—Christ Banker and John H. Roberts, Pittsburg, Pa., assignors to Wm. M. Babbott, same place. (No model.) No. 331,109. Filed November 5, 1884.

**GRAIN DRIER.**—George H. Immendorf, Philadelphia, Pa., assignor to Henry G. Morris, same place. (No model.) No. 331,138. Filed March 21, 1885.

Issued on Dec. 1, 1885.

**GRAIN CAR DOOR.**—William McGuire, Chicago, Ill., assignor to himself and Frank Jager, same place. (No model.) No. 331,315. Filed June 6, 1885.

**GRAIN SEPARATOR.**—Hezekiah Bailey, St. Thomas, Ontario, Canada. (No model.) No. 331,468. Filed April 9, 1885.

Issued on Dec. 8, 1885.

**BALING PRESS.**—Murray H. Durst, Wheatland, Cal. (No model.) No. 331,873. Filed May 18, 1885.

**BALING PRESS.**—Thomas M. Workman, Clinton, S. C., assignor of one-half to Joseph A. Bailey, same place. (No model.) No. 331,932. Filed June 4, 1885.

**MANUFACTURING TEXTILE BELTS.**—Maurice Gaudy, Liverpool, Eng. (No specimens.) No. 331,958. Filed May 16, 1885.

**CONVEYOR.**—William Griesser, Chicago, Ill. (No model.) No. 331,961. Filed Sept. 10, 1885.

**GRAIN SEPARATOR.**—Andrew T. Hawley, Alton, Ill. (No model.) No. 331,967. Filed Aug. 11, 1885.

**AUTOMATIC GRAIN WEIGHER AND REGISTER.**—Isaac N. Griffith and Cary F. Griffith, Macomb, Ill., assignors to Alice A. Griffith and Mary B. Griffith, same place. (No model.) No. 331,962. Filed April 6, 1885.

**STOP MOTION FOR GRAIN WEIGHING APPARATUS.**—Charles Seessle, New York, N. Y., assignor to the New York Automatic Scale Co., same place. (No model.) No. 332,116. Filed June 26, 1885.

Over 200,000 Howe Scales have been sold, and the demand is increasing continually. Borden, Seileck & Co., agents, Chicago, Ill.

### "GILBERTSON'S OLD METHOD" GUARANTEED ROOFING PLATES.

Roofing plates which are made of either steel or iron, are coated with a mixture of lead and tin, by two methods. The original manner by which roofing plates were coated was by dipping the crude iron or steel plates into a mixture of tin and allowing the sheets to absorb all the coating that was possible, and it is by the same process that the "Gilbertson's Old Method" is made to-day. The other process, by which the majority of roofing plates are made, is known as the "Patent Roller Process," by which the plates are put into a bath of tin and lead, and are passed through rolls, the pressure of which leaves on the iron or steel a thickness of coating that determines the value of the roofing plate. These rolls can be so adjusted as to leave a good amount of coating on the plate, such as the "Camaret" has, or an ordinary coming, or a very scant one. Hence the only actual difference between the "Camaret" and the "Gilbertson's Old Method" is, that the latter plate has the heavier coating.

There are, at the present time, certain brands of roofing plates in the market, styled "Re-dipped," "Double Dipped," "Triple coated," etc., etc., all of which titles are used merely to designate extra coated plates. These terms are, however, incorrect and misleading, as it is impossible for any plate to take more metal than adheres to it by the first dipping, if left in the bath of tin and lead a requisite length of time, and no plate can have its coating increased in thickness by being re-dipped.

There have been for a number of years only two sizes of roofing plates made, 14x20 and 20x28. The larger size is mostly used, from the fact that being double the size of the smaller plate it requires less seams on the roof, and consequently cheapens the cost of putting on. There is a size, 10x20, now used for gutters and leader pipe.

There are only two thicknesses of roofing plates made—IC, or No. 29 gauge, which represents in weight eight ounces to the square foot, and IX, or No. 27 gauge, which equals in weight ten ounces to the square foot.

The IC plates are used to a far greater extent than the IX, from the fact that they are less expensive, and as cheapness has entered more or less into the question of roofs, the IC has been more generally used on this account. At the same time it must not be forgotten that for the extra cost of a box of IX over IC there is an excess of weight given over that of an IC plate of two ounces per square foot, and this is fully worth the difference in price.

The "Gilbertson's Old Method" and the "Camaret" works have been established for generations. They are controlled and operated by makers who are among the most responsible and trustworthy in Europe. They guarantee that the quality of these brands shall be kept up to standard on every occasion. Messrs. Merchant & Co., Importers of tin andterne plates, 525 Arch street, Philadelphia, are the proprietors of these goods for the United States, and they, also, add their guarantee to the quality of these brands.

New Ulm, Minn., has organized a Board of Trade with 45 members.

A Missouri farmer who has been testing seed corn from the butt, the tip and the middle of ears for three years, finds that the corn from the tips of the ears will ripen first, that from the middle next, and that from the butt last.

Receipts of grain for October and November aggregated 13,268 cars of wheat, 36,271 cars of corn, 15,489 cars of oats, 1,878 cars of rye, 6,942 cars of barley. For the same time in 1884 they were 34,683 cars of wheat, 41,208 cars of corn, 15,803 cars of oats, 4,013 cars of rye, 5,787 cars of barley.

During November there were inspected here 3,637 cars of wheat, 5,698 cars of corn, 2,367 cars of oats, 332 cars of rye, 2,163 cars of barley, against 9,694 cars of wheat, 8,204 cars of corn, 2,428 cars of oats, 382 cars of rye, 1,634 cars of barley for November last year. Receipts of wheat this year are 62 per cent. less than in November, 1884.

The acreage of land adapted to wheat culture in the states on the Pacific Coast is estimated at 100,000,000 acres, which is distributed as follows: California, 25,000,000; Oregon, 18,000,000; Colorado and Idaho, 10,000,000 each; Montana, Utah, Wyoming, 7,000,000 each. The great bulk of all this wheat land yet lies untouched.



The Webster & Comstock Mfg. Co., of this city, will build an addition to their works.

The Link Belt Machinery Company, of this city, have placed their new grain scouring machine on the English market through their agent, J. Schlesinger, 59 Mark Lane, London, E. C.

The Main Belting Company report a very fair trade throughout the West, as also among the mining districts, where they have a nice trade. Their agricultural business is also becoming lively.

A company has been incorporated in Lincoln, Neb., with a capital of \$300,000, for the manufacture of the Kuhlman Automatic Scale. Works will be erected and business commenced at once.

The Dakota Farmer says: "Mr. J. F. Johnson, of the firm of Johnson & Field, Racine, Wis., manufacturers of fanning mills and land rollers, called at the Farmer office a few days since. He has been visiting his local agents in our territory and working up the trade. They report large sales in their fanning mills this season, and an increasing demand for rollers in Dakota."

Large consignments of fire-hose have recently been made by the Western department of the Gutta Percha and Rubber Manufacturing Company to Minneapolis and Litchfield, Minn.; Bedford and Centralia, Iowa; Sullivan, Ind.; Chippewa Falls, Jefferson, Berlin, Eau Claire, Alma, Menomonie and Wausau, Wis., and other points. A contract for elevator belting has also just been booked for shipment to Washburn, Dak.

Amos Bros., Syracuse, N. Y., one of the largest milling firms in the East, speak as follows regarding the Coker & Metcalf Steam Power Grain Shovel, put into their mill by the Webster & Comstock Mfg. Co., of this city: "We are very much pleased with the steam shovel put into our mill last January. It meets our expectations and more too. It is a great saving, and we cheerfully recommend it to anyone in want of a steam shovel for unloading cars."

The Joliet Steel Co. recently made over 900 tons of ingots, and turned out 3,000 finished rails thirty feet long, weighing 800 tons, in twenty-four hours; and for the week over 8,500 tons of finished rails and 4,200 tons of ingots. The ingots were made in two eight-ton converters with a pair of Reynolds' Patent Blowing Engines with air cylinders 48 inches diameter, 54-inch stroke. The finishing rolls were driven by Reynolds' New Positive Motion Automatic Cut-off Engine, steam cylinder 40 inches diameter, five-foot stroke, running 107 revolutions per minute; both engines being furnished by Messrs. E. P. Allis & Co., of Milwaukee. This record speaks well for the management of the works, as well as for the engines and new automatic machinery recently introduced for handling the material while being rolled.

THE case against the Zell Boiler for infringement of the Babcock & Wilcox patents has not been decided or withdrawn, as has been stated in some publications, but is on the docket for an early trial. The facts seem to be that for the purpose of discovering the defense, if any, of the Zell people, the Babcock & Wilcox Company made a feint of a flank movement in the form of a motion for a preliminary injunction against a small boiler in use in New York, and, having secured the object aimed at, they quietly withdrew the motion, but not the suit, which will take its regular course, while they prepared an attack along the line by filing additional suits against the Pioneer Iron Works and the Safety Steam Generator Company. The Babcock & Wilcox Company claim that the "Zell" Boiler infringes four patents belonging to them, and there seems to be more than a skirmish in that direction.

Private advices from St. Paul say that there are 5,500,000 bushels of wheat on the Manitoba Railroad.

Kaffir corn, the seeds of which were brought from Africa, is said to have yielded 200 bushels to the acre on an experimental farm in Georgia this year.

With only an average crop, California's wheat yield is estimated at 1,200,000 tons. Interior reports indicate a large increase of the wheat acreage this year.



## ELEVATOR AND GRAIN NEWS

Huron, Dak., is to have a flax mill.

Alvarado, Tex., contemplates building an elevator.

A new elevator has been built at Grand Rapids, Dak.

An independent elevator is talked of at Ashby, Minn.

Corn averaged 50 bushels to the acre in Dixon county, Neb.

Park River, Walsh Co., Dak., has a 95,000-bushel elevator.

An independent elevator is to be built at Arlington, Minn.

McGaughey & Carter, grain dealers, Atlanta, Ga., have sold out.

C. Anderson, of Roberts, Ill., has ordered the Harrison Conveyor.

French & Goss, grain dealers, Pittsfield, N. H., have dissolved.

A large elevator will be built by the railroad at Windom, Minn.

An independent warehouse is being built at Green Isle, Minn.

Tontz & Ennis succeed John Tontz, grain dealer, at Girard, Kan.

Grafton, Dak., has a private wheat buyer in the person of Mr. Driscoll.

Ellendale, Dak., received 40,000 bushels of flax the past season.

A corn stalk 25 feet long was recently exhibited in Lafayette, Ind.

The corn crop of Nance county, Neb., is figured at 350,000 bushels.

Chas. Kaestner & Co., Chicago, has ordered 450 feet of Harrison Conveyor.

The corn crop of Nebraska for 1885 is estimated at 129,494,387 bushels.

Kasson, Minn., has four grain elevators, each independent of the other.

Joseph Miller & Co., hay and grain dealers, Lowell, Mass., have dissolved.

J. D. Hatfield, grain dealer, of Neligh, Neb., has sold out to J. J. Hellick.

The average yield of corn in Clay county, Dak., was about 50 bushels per acre.

The "Enterprise Distillery," at Pekin, Ill., is mashing 1,500 bushels of grain per day.

Aultman Engine Co., Des Moines, Iowa, have ordered 350 feet of Harrison Conveyor.

John O. Peterson is building a 13,000-bushel wheat warehouse at Evansville, Minn.

N. R. Buchanan, Mt. Union, Ind., has put in the Harrison Conveyor for ear corn.

W. G. Raoul has purchased an elevator and machinery at Port Royal, S. C., for \$10,025.

A sum of about \$12,000 has been subscribed towards the farmers' elevator at Minto, Dak.

R. D. Carr, grain dealer and proprietor of an elevator at Ramsey, Ill., has made an assignment.

Werner Marx, a farmer of Cedar county, Neb., is said to have an ear of corn having 1,300 kernels.

Farmers of Devil's Lake, Dak., are discussing the advisability of building an independent elevator.

Smith & Koss, of Bowling Green, Ohio, have ordered of Borden, Selleck & Co. one Harrison Conveyor.

Scotland, Dak., will ship 450 cars of flax on the Milwaukee road this season, against 426 cars last year.

Hubbard & Co., grain commission merchants, Kansas City, Mo., are succeeded by Hubbard, Kinney & Co.

The P. & H. elevator, at Crookston, Minn., had to stop buying recently on account of lack of storage room.

V. Blatz, Milwaukee, Wis., has ordered 1,000 feet of Harrison Conveyor of Borden, Selleck & Co., this city.

A starch mill is to be built at Monticello, Minn., capable of handling about 75,000 bushels of potatoes per year.

A. B. Rowly, late post trader at Pine Ridge Agency, Neb., will probably engage in grain business at Oakdale, Neb.

Seeley, Son & Co., Fremont, Neb., have ordered 100 feet of Harrison Conveyor for the elevator at David City, Neb.

Seeley, Son & Co., Fremont, Neb., have ordered Harrison Conveyor for the Bay State Cattle Co., North Bend, Neb.

J. Buckner, of Arlington, Ind., has ordered Harrison Conveyor of Borden, Selleck & Co., this city, for ear corn.

The D. R. Putnam Elevator Co. has built a large grain warehouse in connection with their elevator at Ellendale, Dak.

Hitherto soft wheat has generally been grown in South Dakota. A farmer of Diana, Sanborn county, who tried No. 1 hard wheat this year, has just sold his entire stock

to the Waukesha, Wis., mills, at nearly ten cents above the market price, showing that the hard variety pays the best.

Holdrege, Neb., claims to ship three times more grain on the B. & M. than any other town in that part of the state.

R. Tilton, of Pleasant Grove, Minn., is reported having raised 190 bushels of winter wheat on three acres.

The elevators at Glenwood, Minn., have so far taken in 120,000 bushels of wheat this season, most of which is No. 1 hard.

A. D. Toner, of Kewanna, Ind., has ordered of Borden, Selleck & Co., of this city, three Harrison Conveyors for his elevator.

The farmers of Aurdale, Minn., have erected a grain warehouse on the shore of Wall Lake, and put a buyer in the place.

C. C. Hitchcock, of Flat Rock, Wayne Co., Mich., thinks of putting up a small elevator that will hold about 5,000 bushels.

The farmers' elevator at Fergus Falls, Minn., is completed. It contains twelve bins, and has a capacity of 8,000 bushels.

The Union Iron Works, of Decatur, Ill., have ordered the Harrison Conveyor of Borden, Selleck & Co., of this city, for ear corn.

The farmers' elevator at Aberdeen, Dak., which was opened Oct. 14, has, since that date, received about 19,000 bushels of wheat.

Rand & Brown, bonanza farmers of Grandin, Dak., have an elevator of their own, in which is stored 65,000 bushels of wheat.

Messrs. Lee & Herrick, of Crookston, Minn., have ordered Harrison Conveyor, to carry grain from mill to elevator and return.

The new warehouse of the Fergus Wheat Association, Fergus, Minn., has twelve bins, with a capacity of from 15,000 to 18,000 bushels.

Johnston & Karr, grain buyers of Seymour, Ill., bought and shipped 50,000 bushels of oats from the last oat crop harvested in that vicinity.

Over 30,000 bushels of wheat have been marketed at the Felton, Minn., elevator so far this fall, and about 50,000 bushels are expected.

The Farmers' Wheat Association of Fergus Falls, Minn., elected DeWitt Davenport as wheat buyer, and commenced buying wheat Dec. 10.

Melchert, Granger & Co., grain dealers, Davenport, Iowa, have dissolved. A new firm has been formed under the style of Granger, Bird & Co.

James Baines, statistician of Dakota, estimates that fully two-thirds of the 1885 wheat crop of Dakota have already gone out of the farmers' hands.

It has been rumored in Racine, Wis., that a number of outside capitalists contemplate erecting an elevator there at some convenient point along the river.

The business men's grain buyers' association, at Huron, Dak., began buying wheat Nov. 27, taking in all the wheat that came to town, 1,000 bushels in all.

The receipts of barley at the port of Oswego, N. Y., amounted to 2,816,000 bushels this season, an increase of about 200,000 bushels over those of last season.

There has been some complaint lately, by the farmers near Albert Lea, Minn., that neighboring towns are paying more for wheat than the Albert Lea buyers.

A Kansas man named Bartley Barlow claims that he can husk 100 bushels of corn a day in a field that yields 60 bushels per acre, and put it in the crib.

The new malt house at Hastings, Minn., operated by Louis Niedere, is running to its full capacity, manufacturing into malt 350 bushels of barley per day.

R. D. Carr, a large dealer in general merchandise, grain, and stock, of Hillsboro, Ill., made an assignment Dec. 9. Liabilities, \$7,000; assets, \$5,000 or \$6,000.

Farmers of the southern section of Cerro Gordo county, Iowa, have formed an association for the purpose of self-protection against grain and produce speculators.

Two steamers running on the Red River, north and south of Fargo, Dak., have shipped, the past season, nearly 400,000 bushels of wheat from the elevators along the river.

Manito, Ill., has of late been having the largest grain receipts known in the history of the town. One elevator alone received between 7,000 and 8,000 bushels of corn in one day.

G. W. Thomas, a bucket-shop man of Pittsburg, Pa., was arrested, Nov. 28, on a charge of embezzlement. He claimed to represent Campbell & Co., grain dealers of Chicago, Ill.

Advices from St. Louis say the visible and invisible supply of winter wheat has not been lighter in ten years. Receipts of No. 2 red there are said to hardly average five cars a day.

The new elevator at Leroy, Ill., which, by the way, was built in thirty days from the time the old one burned, has a capacity of 50,000 bushels, with a number of outside cribs.

Among the steam elevators now in process of erection or nearly completed in the towns along the Central Branch of the Union Pacific Railroad, in Kansas, are: One at Centuria, capacity 40,000 bushels; Greenleaf, 35,000; Clifton, 35,000; Corning, 10,000; Waterville, 30,000; Alton, 25,000; Barnes, 30,000; Republic, 30,000; Warwick,

30,000; and Downes, 15,000 bushels. In addition to these a number of horse power elevators have been built at the smaller stations with an aggregate capacity of over 2,000,000 bushels.

The Illinois River Elevator Company, of Chicago, Ill., has been incorporated with a capital stock of \$100,000. The incorporators are L. D. Norton, J. L. Norton, and Edmund L. Norton.

Messrs. George F. Strait & Co., of Shakopee, Minn., whose mill was lately burned, have fitted up their grain elevator, adding steam power to it, and are ready to receive wheat for storage.

The new grain warehouse at Clear Lake, Dak., built by Cline Bull, of Sibley, Iowa, has been purchased and will be operated by U. D. Palmer, of White, and N. P. Hanson, of Aurora, Dak.

The Commercial Grain and Stock Exchange (limited) has been incorporated at Chicago, Ill., by William T. McComb, John W. Paddock, and Will B. Herbert. The capital stock is \$5,000,000.

Some mischievous boys recently obtained an entrance into the grain warehouse of Capt. Hatfield, of Neligh, Neb., and mixed up different kinds of grain, causing considerable damage to the owner.

Work has begun on Mr. Scouten's new elevator at Waterville, Kan. The main building is to be 32x44 feet, with driveway and dump on the outside. Mr. Adams, of Atchison, Kan., is in charge of the job.

The Merchants' and Farmers' Elevator Company at Flandreau, Dak., buy grain on the basis of market reports they receive twice a day from Chicago, regardless of the prices paid by the other companies.

The Mutual Elevator Company, at Chesfer, Ill., has been incorporated with a capital stock of \$4,000, to construct and build grain elevators. The incorporators are Wesley Grant, F. Buckmann, and William J. Craig.

A Farmers' Elevator Company has been formed at Redfield, Spink county, Dak., for the purpose of storing and shipping wheat. Seven similar companies carry on more or less extensive dealings at various points in the county.

Mr. Jansen, of the Red River Valley Elevator Company and Mr. Kerns, of the Minneapolis & Northern Elevator Company, are reported as giving great satisfaction as wheat buyers to the farmers of St. Vincent, Minn., and vicinity.

Arrangements are being made for the erection of a line of Duluth elevators in North Dakota next spring. Larimore will get a warehouse of half a million bushels capacity, small elevators to be built at all stations west and north.

Mayor Otto Puhlmann, of Plymouth, Wis., proprietor of the "Plymouth Roller Mills," and grain dealer, made an assignment to his bookkeeper, B. Crockett, Nov. 21. His liabilities aggregated \$25,000, and the nominal assets, \$50,000.

There are 300,000 tons of wheat in the interior of Oregon awaiting shipment to Portland or the coast. The freight charges of the local roads is \$6 per ton, or 18 cents per bushel, which is more than the rate from Chicago to Liverpool.

A. J. Ross, who ran a bucket-shop at Indianapolis, Ind., for McCormick, Kennet & Co., of Chicago, has disappeared, leaving liabilities of \$1,000 unsettled. He ran short on corn and oats, and was unable to meet the demands made upon him.

Hon. H. S. Oliver, the granger statesman of Dakota, marketed his wheat recently, and not being able to obtain a grade above No. 1 Northern at Lisbon, Dak., shipped it to Duluth, Minn., where he got the No. 1 hard grade, gaining 8 1/2 cents a bushel.

The Alabastine Co., of Grand Rapids, Mich., have recently put into their works a Webster & Comstock Friction Clutch, of 100-horse power. This clutch transmits the power direct off from the engine shaft, and drives all the machinery in the mill.

Messrs. Mueller & Westphal will build a large brewery near Keegan Lake, Minneapolis, Minn., to have a capacity of from 30,000 to 40,000 barrels of beer per annum. The total cost of the establishment, including the price paid for the site, will be about \$100,000.

Farmers in the northern counties of Dakota are endeavoring to organize a stock company to establish an independent system of elevators along the Manitoba R. R., to compete with the present ones, which, they allege, are managed in the interest of the Minneapolis Millers' Association.

A brewer at Toledo, Ohio, who is said to carry on the largest business of the kind in the state, has incorporated a brewing company with a capital of \$800,000, and distributed one-half of the shares gratuitously among his employees as a tribute to their services, which helped him to accumulate his wealth.

Business men and farmers of Huron, Dak., have formed a wheat buyers' association, to buy wheat and other grains in opposition to Van Dusen & Co., who have been paying from two to seven cents less a bushel than farmers could get from independent buyers within twelve or twenty miles of Huron.

The Pierce Mill Co., of Pierce, Neb., write the Webster & Comstock Mfg. Co., of Chicago, Ill., regarding their friction clutch as follows: "The friction clutch we bought of you is a great success. We are enabled by its use to throw in and out of gear at will the entire cleaning machinery of our mill—five machines—and so



far it has not given us any trouble. We are very much pleased with it."

The Louisiana rice crop is said to be nearly all in. The receipts at New Orleans of rough thus far are 650,000 barrels, equal to 260,000 barrels of cleaned. Nearly two-thirds have already entered into consumption, this amount being over double that of last year to equal date. Low prices have enlarged the demand.

The new steam elevator just completed at Barnes, Kan., has a capacity of 50,000 bushels. The building is 32x48 feet, and its height, with tower, 50 feet. The shelter pit and basement is 32 feet deep, affording a great capacity for the handling of grain. The cost of the elevator, which is owned by a Mr. Solt, is about \$7,000.

Joseph Smith and Rudolph and John Scheffner, of St. Paul, Minn., were arrested, Nov. 26, on the charge of stealing grain from various granaries at Burkhardt, Minn., and vicinity, to the amount of several hundred bushels. Their method, it is said, was to bore holes through the floors of the granaries and thus draw out the wheat.

The Milwaukee firm of Birge & Smith have just got out plans for a 375,000-bushel elevator, which will be erected as soon as possible for the Jos. Schlitz Brewing Company, Milwaukee, Wis. The Edward Sanderson Elevator, same city, for which the plans were also furnished by Birge & Smith, is rapidly nearing completion, and will have a capacity of 200,000 bushels.

Architect Moulton, of this city, reports the great \$240,000 elevator planned by him at Washburn, Wis., for the Chicago, St. Paul, Minneapolis & Omaha Railroad as progressing finely. The deep-water foundation is in, the stone work done, and the superstructure in part thirty feet high. The 300,000-bushel elevator on the North-western Road at Winona, also planned by him, is just finishing.

Since the Merchants' and Farmers' Grain and Elevator Company has been incorporated at Flandreau, Dak., the farmers of Moody county have been boycotting the foreign companies, though the latter are offering better prices. The farmers are under the impression that they have not been treated fairly by these companies, and seem to be determined to break up the monopolies which the foreign companies formerly enjoyed.

Messrs. Thompson & Campbell, of Philadelphia, Pa., have lately sold Trimmer grain-cleaning machines to the following parties: Martin Oberholzer, Honey Brook, Pa.; L. H. Dreka, Sassafras, Md.; Chas. Walton & Son, Trenton, N. J.; John C. Hopkins, Moorestown, N. J.; Jacob Beecroft & Son, Elberon, N. J.; Reynolds & Tuttle, Horse Heads, N. Y.; J. S. Huston, Mechanicsburg, Pa.; John Otto, Dunellen, N. J.; J. T. Williams & Co., Easton, Pa.; A. C. Godshall & Bro., Lansdale, Pa.; D. G. Tepper, 36 Broadway, N. Y.; E. S. Wertz, Reading, Pa.; Chas. B. Schmehl, Reading, Pa.; Wm. Brand, Staunton, Va.; Chas. P. Swingle, Paxtonville, Pa.; Mussina, Wolf & Co., Lewisburg, Pa.; J. D. Sharpless, Ashland, Del.; Chas. Atkinson, Columbus, N. J.; J. M. Smalley, Greenwich, N. J.; A. S. Clouser, Port Indian, Pa.; C. W. Fisher, McClure, Pa.; Robert Holcombe, Stockton, N. J.; Luke Doolittle, Binghamton, N. Y.; Jacob Alderfer, Klein's, Pa.; Henry Riegel, Emans, Pa.; Charles Roeder, Pine Grove, Pa.; C. Driebilbes, Shoemaker-ville, Pa.; Joseph E. Brinton, Thornton, Pa.; E. Snyder, Delaware, Ohio; Wm. Mack, Cornwall, Can.; Stilwell & Bierce Mfg. Co., Dayton, Ohio.

## BOARD OF TRADE CONTRACTS.

The business of the stock exchanges and the boards of trade has become so firmly established that it can not be uprooted by law or legal decisions. That as a matter of fact, all sales of property on a margin for future delivery are gambling contracts, being a mere wager as to the price of the property at the time it is to be delivered, is too obvious for denial, or the exceptions are so few as not to impair the universality of the rule. Yet these transactions in stocks, grain and provisions have become so interwoven with the banking, the exchanges and credits of the entire country, that an attempt to eliminate them by law or judicial decisions would produce disturbance and disaster throughout all the ranks of business and finance.

The courts in their decisions and special legislation in some of the states assume that all these contracts are valid, unless the contrary is made affirmatively to appear by more than the mere testimony of one party in interest. A man who has put up margins and lost them, or who has obtained credit from his brokers, and run himself heavily in debt, can not by his mere oath that he understood his purchases or sales to be fictitious, prove them to have been invalid. He must be corroborated by other testimony, and it must be made to appear that both parties understood the contract to be a mere wager on the price of the property in order to establish its invalidity. This is now understood to be the rule of legal interpretation throughout the country in regard to such contracts.

## A BIG CORN CROP, WITHOUT DOUBT.

"You heard of the big corn crop this year, I suppose?" asked Ebenzer Jones.

"Yes," replied Zebedee Smith.

"Well, so did I, but I did not think it was anything nearly so large as this item indicates."

"What does the item say?"

"It says that a Baltimore chiropodist has earned \$15,000 this year."—Pittsburg Chronicle.

## ITEMS FROM ABROAD

Reports from South Australia put the wheat crop of that colony at 9,500,000 bushels, against 14,621,755 bushels last year.

The Germ in Bundesrath has unanimously approved the bill for the construction of the ship canal between the Baltic and the North Sea.

The French Chamber of Deputies is discussing proposals which have the object of raising the import duty on flour and grain, which is already pretty high.

The yield of the wheat crop in Hungary this year was 114,000,000 bushels, which were raised on 7,940,000 acres, making the average yield about 14.4 bushels per acre.

The exportable surplus of South Australian wheat for this season is estimated at 170,000 tons, against 320,000 tons last year. The average yield is given at five bushels per acre, while last year it was twelve bushels.

The imports of flour into Germany during the first nine months of 1885 amounted to only 174,847 quintals, against 314,518 quintals last year. The exports during the same period were 843,710 quintals, or about 100,000 less than last year.

The imports of wheat into Germany from Jan. 1 to Sept. 30, 1885, amounted to 5,096,851 quintals, against 5,508,425 quintals for the same period of last year. No doubt the decrease is due to the exorbitant import duty on cereals enacted last winter.

A private cablegram from St. Petersburg makes the Russian crop of winter and spring wheat 48,000,000 bushels and oats 200,000,000 bushels below an average, but gives rye 80,000,000 bushels above the average crop. The increase is sufficient to overcome the deficiency in wheat.

The grain and produce merchants of Prague, the capital of Bohemia, are agitating for a produce exchange of their own. There are about 400 grain and produce merchants in the city and about 2,050 in the whole district. Besides there are thirty-three flouring mills with an aggregate capacity of 435,915 hectoliters per year, and sixty-three breweries in the district tributary to Prague. The lack of an institution of the above kind is being felt keenly by the extensive grain trade of that city.

## CEREALS IN SPIRITS.

Not unfrequently, in speeches and editorials, the demand for grain to be used in making distilled spirits is referred to as a cause of stimulation in prices, and therefore as an advantage to farmers. Evidently few people understand how small a quantity of grain is used for that purpose. Actually it is less than one per cent. of the production, as the following table, compiled from the records of the revenue service, very strikingly shows. It is possible that this would be better served in the shape of bread, but it would add little to the daily rations of the people. It is as follows:

Articles.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Wheat.	1,027,886	1,394,697	1,890,502	2,453,184	2,192,719	1,707,971	1,693,914
Barley.	89,917	63,877	5,103	190,886	301,241	291,368	114,475
Rye.	55,612	53,877	18,882	4,340,056	4,304,771	3,781,729	2,969,658
Oats.	2,169,832	2,838,725	3,610,939	4,124,006	3,804,771	3,408,409	2,746,505
Other.	54,231	141,112	140,882	177,575	168,783	125,588	124,165
Mill feed.	277,607	372,392	536,392	612,726	432,330	300,240	241,073
Other materials.	71	2,295	211,134	505	13,724	23,208	591
Total.	14,980,532	18,335,814	24,006,359	31,291,173	27,459,050	18,344,077	15,927,992

A considerable quantity of barley is consumed in the manufacture of fermented liquors which is not officially estimated.

## THE HENNEPIN CANAL.

The Michigan and Mississippi Canal Commission held their annual meeting at Chicago, Nov. 5, eighteen members and a number of interested strangers, including a large delegation from the Mississippi and Missouri Valley Trade Association, being present. Gov. Bross, on being called to the chair, said that the special object of the meeting was to take steps for securing the assistance of the St. Paul Association in getting the appropriation bill through Congress.

After some discussion it was decided to change the name of the commission to that of Lake Michigan and Mississippi River Canal Commission. Next Judge Murphy, of Davenport, Iowa, addressed the meeting at length on the subject before it, pleading for an energetic advancement of the great project. In support of his plea he claimed that water transportation is 50 per cent. cheaper than any other, and the only effective regulator of freight rates, as railroads frequently pool their interests and even their earnings. For instance, the Chicago & Rock Island will charge three or four cents per bushel of wheat for a certain number of miles where the canal competes, while outside that competition they will charge twelve cents for the same distance. Hence the practical effect of the completion of the canal would be to reduce the cost of transportation to one-fourth of the present rate. There had been some local feeling against the project among the people in the Mississippi Valley growing from the wrong idea that only the great termini, Chicago, Rock Island, and Davenport, would benefit by the canal. But St. Paul, St. Louis, in fact all the points along the river were just as much interested in the improvement. And it was but fair that Illinois and Iowa, furnishing one-third of the actual internal products shipped abroad, should be granted the facilities of transportation that other parts of the country enjoyed.

Mr. Utley, chairman of the commission, then showed from tables he had made up a few years ago, that the average charge of all the New York railroads for carrying a ton of freight was 0.715 cents per mile, the actual cost being only 0.42 cents per mile, while the charge made on the Erie Canal, from Buffalo to New York, amounted only to 0.21 cents per ton per mile. If this was not sufficient argument for the necessity of constructing the canal, the countries of Europe would teach us a lesson in the line of cheapening rates by constructing numerous new canals, especially in Russia, with the obvious result of stealing from us our grain trade in the European market, unless a direct water route to the Atlantic seaboard give our grain a fair show in competing with the foreign product. Previous to the building of the Suez Canal less than 400,000 bushels of grain per annum were shipped from India, while in 1884 it sent 77,000,000 bushels to Europe.

The officers elected at the meeting are Joseph N. Utley, President; John C. Dore, First Vice-President; J. B. Miller, Second Vice-President; Murry Nelson, Treasurer; D. T. Littler, Secretary. For members of the Executive Committee were appointed: William Bross, George French, C. B. Farwell, A. O. Marshall, Murry Nelson, L. B. Ray, Joseph Utley, T. J. Robinson, D. T. Littler, Charles H. Deere.

The following gentlemen were also added to the committee: H. M. Singer, Lemont, Ill.; H. A. Sanger, Joliet; William Cullen, Ottawa; Andrew Lynch, Ottawa; Captain John Dysart, Dixon; T. D. Catlin, Ottawa; T. E. McKinley, Ottawa; J. W. Stewart, Rock Island; H. C. Cleveland, Rock Island; J. H. Seaton, Hennepin; James S. Elwood, Joliet; P. C. Haley, Joliet; James A. Hawley, Dixon; Edward Atkinson, Boston, Mass.; A. Barlow, Carson, Minn.; S. C. Eells, Dixon; Marshall W. Carter, Chicago; ex-Governor John H. Geer, Burlington, Iowa; L. F. Beach, Morris; E. C. Allen, Ottawa; S. F. Brown, Morris.

A resolution of thanks to President Utley for his past efforts on behalf of the objects of the commission was unanimously passed, special attention being called in the resolution to Mr. Utley's efforts in securing the indorsement of the Hennepin Canal scheme by the New York Legislature last winter.

Brief remarks were then made by Messrs. Littler and Cullen, indorsing what others had said.

The commission then adjourned its annual session sine die.

Says the St. Cloud, Minn., *Journal-Press*: The worse than utter uselessness of fixed grades in wheat seems more clearly shown every day. They are apparently of value only to buyers, to mystify farmers and compel them to sell their grain for less than its actual value. Wheat that is not technically up to the standard fixed by law as No. 1 hard, though just as good for milling purposes as that fanciful grade, is dubbed No. 1 Northern and the owner has to take four or five cents less a bushel for it than it is worth. Wheat that no miller who was buying for his own use under competition would hesitate to take at No. 1 hard price or within a cent of that rate, is for some trifling cause that does not in the least decrease its flour-producing qualities, dropped a grade and five cents in price. At his market, where almost all the grain is of the hard varieties, not one bushel has been bought this season as No. 1 hard, yet we venture to say that a large part of it is worth very nearly if not quite as much to the miller as the sample shown in the inspector's office as No. 1 hard. Just why wheat should not be bought and sold as every other commodity is, in open market, in bulk or by sample, for just what it is worth, independent of technical objections, is a conundrum that no one has as yet satisfactorily answered. Until this is done we do not believe private elevators will be able to compete with the Millers' Association.



# THE AMERICAN ELEVATOR AND GRAIN TRADE

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## ADVERTISING.

This paper has a large circulation among the elevator men and grain dealers of the country, and is the best medium in the United States for reaching this trade. Advertising rates made known upon application.

## CORRESPONDENCE.

We solicit correspondence upon all topics of interest connected with the handling of grain or cognate subjects.

## THE CHICAGO ELEVATORS.

There is one thing that the railroads centering in Chicago and the elevator owners do not clearly understand. Perhaps the latter do; but they make no sign. It is that Chicago is in danger of losing a very large part of her grain trade. The elevators of this city insist on maintaining their charges and the railroads virtually prevent competition through the building of new elevators. So long as the owners of the present elevators reap the harvest they do at present from storage charges, they are not likely to care; neither are the railroad officials who are also interested in these elevators; but the holders of stocks in railroads centering in Chicago are certainly interested in preventing a diversion of the carrying trade.

Storage room is being built all through the West and Northwest. Grain does not care to tarry in Chicago. At least 6,000,000 bushels storage capacity has been built the past year that would not have been, had Chicago storage charges been reasonable. And this thing will go on next year. If competition in the elevator business is not allowed in Chicago, there will be competition between Chicago and other points. Chicago must get cured of the big-headed notion that grain must come to Chicago.

The Chicago Board of Trade can grapple with this problem. That body is rich and prosperous. Her members could erect elevators without limit and compel the railroads to give them equal service. Let the Board of Trade act.

## THE DECEMBER REPORT.

The December report of the Department of Agriculture at Washington, giving the farm prices of the principal crops, shows a reduction of the average value of the corn crop to 33 cents a bushel, against 36 cents, the value of the crop the same month last year. The reduction is largest in Ohio and the Southern states west of the Mississippi. Compared with former prices, the value of this year's crop is very low. For the preceding five years the average farm value was 44.7 cents per bushel, and for the preceding ten years, 42.6 cents.

The price of wheat, on the other hand, is shown by the report to be considerably above the average value of last December, which was 65 cents. That of the present month is 73.7 cents, whereas in 1883 it was even 91 cents. For the preceding five years the average farm value of wheat was 90 cents, and for the preceding ten years \$1.05 per bushel. The range of state prices is from 57 cents in Nebraska to \$1.25 in Massachusetts. It

is above \$1 in the Eastern and in the cotton states for home-grown wheat. The value in New York state is 96, an increase of 11 cents; Pennsylvania 95 an increase of 11 cents; Ohio 91, an increase of 16 cents; Kentucky 95, an increase of 19 cents; Michigan 84, an increase of 10 cents; Indiana 86, an increase of 19 cents; Illinois 81, an increase of 18 cents; Wisconsin 76, an increase of 16 cents; Minnesota 70, an increase of 20 cents; Iowa 67, an increase of 12 cents; Missouri 17, an increase of 15 cents; Kansas 65, an increase of 20 cents; Nebraska 67, an increase of 15 cents; Dakota 63, an increase of 17 cents.

The average price for rye is 56 cents, 4 cents more than last year; of barley 56 cents, an increase of 7 cents; of buckwheat, 56 cents, a decrease of 3 cents; of oats, 28 cents, the same as last year.

## ILLINOIS GRAIN DEALERS.

The Central Illinois Grain Dealers' Association, which is the outgrowth of the organization formed four or five years ago for the purpose of contesting the patent right that Mr. Harper, of El Paso, claimed to have on grain dumps, convenes to-day in Bloomington, Ill. The chief object of the convention is the formation of a permanent organization, with a constitution and by-laws, preventing unnecessary competition among its members; further, to secure the organization of local auxiliary societies, legislation on the responsibility of grain dealers to landlords for grain bought of tenants, a system of reports for grain dealers, including stocks on hand, ruling prices, prospective movements, crop conditions, etc., and the discussion of a system of mutual insurance.

## SELLING BY SAMPLE.

Some time ago a Chicago grain dealer received from an association of Nebraska grain shippers certain instructions as to the mode they desired their wheat to be sold, requesting that the shipment "be exposed for sale by sample, and be sold in open market upon its merits alone, . . . that it be not sold from store but on track directly after its arrival, and that in no event shall it be held over twenty-four hours after the sample is ready to be shown."

Referring to this mandatory order, actually shutting out the commission merchant from the deal, the Minneapolis *Tribune* makes a lengthy comment on the two methods of handling wheat in the leading markets, as illustrated by the two great grain centers of the Northwest, Minneapolis and Duluth. The latter is working mainly on the grade system, reducing or raising all the receipts to certain established standards, while the other admits and encourages sales by samples. Which of the two methods will eventually win, the *Tribune* thinks, is not difficult to answer. In issuing the instructions above referred to, the Nebraska shippers evidently were actuated by previous unpleasant experience, implying that wheat has been sold in Chicago otherwise than upon its merits, and their orders were practically a notice on the Chicago grain men that for the future they wanted the price of their wheat to be determined by its actual value as shown by samples, and not by the "gentlemen in the pit."

The efforts, the *Tribune* goes on, which for over twenty-five years have been made by the Chicago Board of Trade to establish a grade of wheat which would form a basis for speculative trading, and at the same time meet the requirements of the export trade, have gained some partial victories, it is true; but in the main the plan is a failure, except from a mere speculative point of view. For milling purposes, where the brand of flour is to be kept at a certain fineness to suit the taste of the consumers, such a standard grade is of no avail, because it has been found impossible to establish the necessary uniformity by blending higher and lower qualities. The grade system is valuable to the miller only so far as it enables him to determine approximately the price of the grain for some time in advance, and to dispose of his prospective production accordingly. But in buying by contract he seldom gets what he wants for his particular brands

of flour. But the producer and interior shipper suffer equally under this system. The local markets are governed by the standard grade established by the speculators in the leading market, and though the wheat brought to the former may be the finest ever grown, its selling value is always established by the speculative grade of the latter. As a curious instance of the leading influence of a central market the fact is mentioned that previous to the enormous developments of the Minneapolis milling interests, the price of the hard Minnesota wheat was regulated by a bastard mixed grade that would not have been good enough for making winter wheat XX flour. The utter impossibility of establishing a uniform grade meeting the demands of the producer as well as those of the consumer, the *Tribune* concludes, should be sufficient argument to induce producers and shippers not to allow the grade system to become the rule of trade rather than the true principle in trade that the product should be sold upon its own merits and by sample.

## THE MINNESOTA LAW.

It will be remembered that the Minnesota grain and warehouse law passed by the last legislature includes a statute providing state grain inspection and weighing at Minneapolis, St. Paul and Duluth. The measure was intended to prevent discriminative grading in favor of the buyer, guaranteeing the seller a fair market. This object, *The Farmers' Advocate* claims, the law has not attained, because it does not compel the elevator men at the three terminal points to make their elevators public warehouses by taking out licenses under the law. The Duluth dealers did take out the licenses, and the commissioners immediately placed state inspectors in them, who have since inspected the grain in and out, prohibiting all mixing of the same. But the Minneapolis grain men did not take out the licenses, and all the commissioners could do was to direct the state inspectors to inspect the grain in the cars on the track. This, *The Farmers' Advocate* alleges, was exactly what the Millers' Association wanted, because it satisfies the people and does not do them any harm. Nay, it just suits their purpose admirably. Suppose they take in grain graded by the inspectors No. 1 hard, No. 1 Northern, No. 2 Northern, respectively. There being no control in the elevators, they can mix these different grades together, and as the grades for the producers are held above what the consumers demand, the mixture may be reinspected No. 1 hard and sold as such, backed up by a state inspector's certificate. This can be done, and *The Farmers' Advocate* is "credibly informed that it is a common practice in Minneapolis," because the inspectors "are not supposed to know where the cars come from they are inspecting." The alleged result is that Minneapolis can afford to pay more for wheat than Duluth, thus freezing her out of the market which naturally would belong to her. Failing to place the two cities on the same footing in regard to the system of inspection, is the great defect of the law, and *The Advocate* demands that it be promptly cured by legislation; but until that is done, the commissioners should remove all restrictions from Duluth which they can not compel Minneapolis to submit to.

The compilations showing the visible supply of grain in the country which are published weekly by the statisticians of the New York and Chicago Exchanges, are at last made up on a somewhat uniform plan. Heretofore the methods of compilation of these two statisticians differed so widely that there is always more or less divergence in their statements. The only marked difference which still exists between the two compilations is that the New York compiler makes an allowance for grain supposed to be in transit by rail, which the Chicagoan does not. However, this is of no material importance, and those interested in the market hence will have it on the authority of two competent witnesses how much grain there is in sight at the end of every week.



## Editorial Mention.

MR. ABERNATHEY has removed his quarters to 1306 Union avenue, Kansas City, Mo.

MR. A. B. COLTON, of the Frost Mfg. Co., Galesburg, Ill., paid us a pleasant call the last month.

THE grain elevator men of Peoria, Ill., have formed a pool to maintain a uniform scale of prices.

MR. JAS. BELL, of David City, Neb., wishes to secure a machine that will clean thoroughly 100 bushels of flaxseed per hour.

HOW CHEAPLY wheat can be raised in India is shown by the fact that a reaper gets about four cents a day, and other workmen in proportion.

DULUTH charges the fact that her elevators, while having a capacity of 10,000,000 bushels, are only a fifth full, to the Minneapolis Millers' Association.

S. D. CARGILL, of the well-known grain buying firm of Cargill & Bro., LaCrosse, Wis., has entered the conjugal state with Miss Lydia E. Peas, of Green Bay, Wis.

CHICAGO's great statesman, Mr. Frank Lawler, is said to oppose the Hennepin Canal, unless the plans are reversed and the Mississippi River drained into Lake Michigan.

THE Iowa Grain Buyers' State Association held a secret session at Des Moines. One hundred and thirty-five firms were represented. Efforts were made to secure harmony of action in regard to rates.

MR. H. J. DEAL, Bucyrus, Ohio, will be pleased to send inquirers a new price-list of his grain testers and other well-known specialties of his manufacture, many of which are suitable for holiday presents.

DULUTH grain men are objecting to the state force inspecting and weighing grain in the Minneapolis mills. They have decided, however, to leave matters as they are for a while, to see how they will turn out.

BORDEN, SELLECK & Co., of this city, report business as brisker, with constantly increasing orders for the Harrison Conveyor, not only for grain, but many long lines for coal, sand and many other purposes.

A CONVENTION of the Central Illinois grain dealers is announced for Dec. 15 and 16, to be held in Bloomington, Ill. The indications are that the meeting will be one of the most important and largest of the kind ever held in the state.

GEO. W. DAWSON has taken charge of the Western branch office of Messrs. Thompson & Campbell, Philadelphia, manufacturers of the Trimmer Machines, and practical millwrights. Mr. Dawson's headquarters are at Columbus, Ohio.

WITH a view, it seems, to increase and facilitate the export wheat trade of the country, the Russian government has directed the Imperial Bank and its branches to advance money on wheat. The rate of interest is to be six per cent., and among the conditions for a loan is one providing for the insurance of the wheat. The profit on exported wheat has been very small in Russia heretofore, owing to the lack of money and trans-

portation facilities. Hence the new measure of the government, it can fairly be predicted, will prove a powerful stimulus and encouragement to the grain trade of Russia.

DELF & GROFF, of Indianapolis, Ind., write us: "We enclose amount of subscription for the AMERICAN ELEVATOR AND GRAIN TRADE, which journal, after careful comparison, we consider the most valuable of its kind that has come under our observation."

THE meanest thing said, so far, against the Minneapolis Millers' Association, is credited to the St. Peter, Minn., *Herald*; speaking of the rumor of slander proceedings against the Chicago *Tribune*, the *Herald* says that the Association cannot be slandered.

A CHICAGO brewery recently received from Canada a cargo of 30,000 bushels of barley, the first shipment of the kind in a good while. In the East, Canadian barley is not favored, either, as much as a few years ago, Western barley having outrun it in the market.

C. A. PILLSBURY, of Minneapolis, Minn., has been complaining of late that the Manitoba R. R. did not give him cars enough to ship his wheat from the elevators of the company. He has threatened to close them and buy on the track if he cannot have cars in proportion to the amounts of his shipments.

WE have it on credible authority that the engineer of the Ohio Board of Public Works, in his forthcoming annual report, will recommend the abandonment of the Ohio Canal throughout its entire length, from Cleveland to Portsmouth, on the Ohio River, on the ground that the canal is not self-supporting.

STOCKS of wheat at Detroit increased 712,000 bushels; St. Paul and Minneapolis, 280,000 bushels. New York, however, decreased 67,000 bushels, St. Louis 70,000 bushels during the past week. The Duluth visible supply is expected to increase 1,250,000 bushels, and the Chicago report 1,000,000 bushels.

WE inadvertently made it appear last month that the "Shuck Sheller," made by Kingsland & Ferguson Mfg. Co., of St. Louis, was intended for the Southwestern trade. This, of course, is not the case. The "Shuck Sheller" is adapted to any section of the country, is in use in all parts, and has been shipped to foreign countries.

EFFORTS are being made by the Duluth Produce Exchange to make that point a flour market for interior mills. It has already secured from the Northern Pacific, the Milwaukee, Lake Shore & Western, and the Wisconsin Central Roads the same tariff on flour to Chicago as that from Minneapolis to Chicago, and a few dealers have made arrangements to try the experiment.

KANSAS and Nebraska grain shippers not on the line of the Central Branch of the Union Pacific have of late been complaining that this road is discriminating against them by shipping grain eastward so much cheaper than any other Kansas-Nebraska road that farmers along the above line get from two to three cents per bushel more for their wheat than is paid along the other roads.

ACCORDING to a statement of the Montreal *Daily Herald*, the shipments of east-bound grain from Manitoba have not been as large so far this season as last year. This fact is to be attributed to the late harvest, which allowed only a small quantity of cereals to be shipped by water before the close of the season. It is expected, however, that much more grain and flour will come from the West this year than last. For the last month on an average 10,000 bushels have been shipped daily over the Canadian Pacific from Manitoba to Montreal, to which must be added considerable

quantities shipped to Ottawa, Toronto, and other points of Ontario. The wheat crop having been a failure in Ontario, dealers are also stocking up with flour from Manitoba mills, and large quantities are constantly being received in Ottawa, Toronto, Quebec, and Montreal.

C. P. HUNTINGTON, President of the Chesapeake & Ohio R. R. Company, is reported directing his attention to the development of terminal facilities and proper steamship connections at Newport News, Va. He owns an elevator at that point with a capacity of 1,600,000 bushels, and expects, by the above improvements, to direct part of the grain shipments from the Northwest to the Atlantic, to Newport News, this point being seventy-five miles nearer Minneapolis than New York.

REFERRING to the revision of the rules now in progress in the House of Representatives, the *Inter Ocean* states that the friends of the Hennepin Canal bill are anxious to secure such a change in the rules as will give the measure to the charge of the Committee on Rivers and Harbors, so that it could be considered along with the other measures for the improvement of navigation. There is strong hope that the above indicated efforts will be met with success.

WE have been shown a letter to Messrs. Charles Kaestner & Co., of this city, written by the Washburn Mill Co., of Anoka, Minn., speaking in the highest terms of the Kaestner Mill. The Washburn Co. had a thirty-inch Kaestner Portable Mill in their mill which was burned over a year ago. When rebuilding, the company ordered another thirty-inch "Kaestner." "We take it," says the Washburn Mill Co., in their letter, "that this is the best recommendation we can give to any mill or piece of machinery."

A LETTER has been shown us written by Messrs. Cargill Bros., of Minneapolis, speaking in terms of highest praise of the "Giant" Dustless Grain Separator, manufactured by Dickey & Pease, Racine, Wis. As we have often referred to this machine, and advertise it in our columns, we are pleased to chronicle the good opinions of it expressed by a firm holding the prominent position of Messrs. Cargill Bros. This firm had previously stated that it would only buy the "Giant" on trial, and accept it only after thorough trial.

CHICAGO elevators contained last Saturday evening 14,285,010 bushels of wheat, 675,475 bushels of corn, 133,774 bushels of oats, 299,788 bushels of rye, and 218,798 bushels of barley; total, 15,612,917 bushels of all kinds of grain, against 13,774,862 bushels a year ago. During the last week our stock increased 433,043 bushels, including an increase of 206,456 bushels of wheat. For the same date the secretary of the Chicago Board of Trade states the visible supply of grain in the United States and Canada as 57,981,156 bushels of wheat, 4,505,397 bushels of corn, 2,530,352 bushels of oats, 739,910 bushels of rye, and 1,609,870 bushels of barley. These figures are larger than the corresponding ones a week ago by 1,197,716 in wheat and 458,159 in corn. The visible supply of wheat for the corresponding week a year ago increased 1,605,197 bushels.

A CASE of alleged discrimination by grain buyers in favor of certain points is reported from Southeastern Minnesota. Zumbrota lately claimed that the buyers at neighboring points, especially in Rochester, south of Zumbrota, were holding out better inducements to farmers than they did in Zumbrota, and that business in town greatly suffered in consequence thereof. Now, the curious point in the affair is that, while Zumbrota upbraided the buyers for discriminating in favor of Rochester, this place appeared to be in a similar predicament, to judge from the fact that the farmers south of that town sold their grain in Chatfield and Grand Meadow instead of in Rochester, claiming that they could obtain better prices as well as more favorable grad-



ing at the former points. These facts, if correct, would go to show that there was a general tendency of the better prices to shifting south, and it was hardly fair of the Zumbrota people to complain of discrimination in favor of a place that was suffering from the same calamity.

THAT canal transportation may be anything but profitable when it has to stand the competition of railroad facilities, is claimed to be proved by the instance of the Delaware & Hudson Canal, extending from Honesdale, Pa., to Kingston, N. Y. Until about twelve years ago, when the canal company obtained control of the Albany & Susquehanna Railroad system and the use of the Erie Road, the canal was the only outlet to the market from the company's coal fields, and the canal stocks were held at about 200 per cent. But since then the canal has become almost valueless, if we are to believe an affidavit made by the company, stating that the canal now is an actual drain on the company's treasure, and that a railroad built on the bed of the canal could transport a ton of coal to tide water at Kingston for fifty-four cents, whereas the rate paid boatmen this year is sixty-five cents a ton.

It is estimated that the states and territories west of the Mississippi and east of the Rocky Mountains, including Wisconsin, have this year produced 148,300,000 bushels of wheat. The amount required for home consumption is set down at 88,183,000 bushels, leaving a surplus of 60,117,000 bushels. This puts the total deficiency from the crop of 1895, east of the Rockies, at 15,471,268 bushels. There was, however, a surplus of 41,802,702 bushels carried over, July 1, and a stock of flour equal to 15,000,000 or 20,000,000 bushels, and some reserve stocks in farmers' hands, and the aggregate of these supplies more than make up the deficiency in this year's crop. The exports from Atlantic ports since July 1 aggregate 20,833,000 bushels, so that the amount still available for export cannot be very large, if the above estimate of the home consumption is correct.

### NORTHWESTERN ELEVATORS.

The rapid development of the Minnesota and Dakota elevator system is, no doubt, among the most striking features in the growth of the "Great Northwest." Within the past ten years elevators and warehouse have sprung up wherever grain was grown; nay, in many sections enterprising capitalists built grain houses before there were settlers to fill them with the product of their toil. To give our readers an idea of the almost unparalleled development, the present extension and the vast importance of the whole elevator system of the Northwest, we print below a brief summary of a lengthy article in the St. Paul Pioneer Press of Dec. 12, containing a complete review of the history and the present state of the various elevator systems. Previous to 1855 the elevator business of Minnesota and Dakota, particularly in the Northern sections, was controlled by a few powerful companies, which were aided by the railroad companies in keeping out the competition of other parties desirous to extend the elevator system. The grain and warehouse law of last winter removed the burdensome restrictions, at least in Minnesota, and the result was a great increase in the number of warehouses built, so that at some stations, where a year ago one or at most two elevators was the rule, there are now three or more. Such is the effect of free competition. A noticeable feature in the general appearance of the warehouses is that in the Southern sections, along the older roads, there are more flat houses and fewer elevators with steam or horse power than in the North, and as a rule the warehouses in the North are larger than those along Southern lines. On the Manitoba Road the minimum capacity is 30,000 bushels, and on the Northern Pacific about 20,000 bushels.

The Manitoba Road leads in the number of elevators and capacity, which is 11,481,000 bushels. The Milwaukee Road has 8,322,500; the Chicago and Northwestern, 5,581,500; the Northern Pa-

cific, 4,859,200, and the Minneapolis and St. Louis, 2,206,200. These are the only roads whose individual capacity exceeds 2,000,000. The cost of the elevators comprising this vast system is a little less than 20 cents per bushel, or \$10,000,000. This amount is invested permanently, and it is entirely independent of the capital necessary to carry on the business which is handled by the system every year. The total capacity of the state and territory is more than equal to this year's crop, 50,000,000 bushels, and if the latter was evenly distributed every bushel could be stored at one time. The cost of receiving, cleaning, elevating, and discharging grain is about two cents per bushel. Elevator companies who buy and ship grain receive from 3 to 3½ cents per bushel. Out of this comes the interest on the investment, all the expense of maintaining and operating the elevator, insurance on the grain, cleaning, and loss of weights and grades at terminal points.

#### SUMMARY.

Total number of elevators and warehouses in Minnesota and Dakota.....	1,513
Bushels.	
Total capacity in country outside terminal points.....	20,854,500
Total capacity in Minneapolis.....	8,834,500
Total capacity in St. Paul.....	1,560,000
Total capacity in Duluth.....	9,460,000
Northern Pacific and branch.....	4,859,200
Chicago and Northwestern.....	5,581,500
Chicago, St. Paul, Minneapolis and Omaha.....	543,000
Chicago, Milwaukee and St. Paul.....	8,322,500
St. Paul, Minneapolis and Manitoba.....	11,481,000
Minneapolis and St. Louis.....	2,206
St. Paul and Duluth.....	185,000
Minnesota and Northwestern.....	241,000
Red River.....	175,000
Grand total.....	54,448,900

A SOMEWHAT intricate charge of "uncommercial conduct," preferred by D. Eggleston & Son, commission merchants, against W. H. Harper, of the Pacific Elevator Company, both of this city, was investigated Dec. 12 by a special committee of the Chicago Board of Trade. The trouble, it was stated, arose from the transference by Mr. Harper of 40,000 bushels of wheat belonging to Eggleston & Son from the old Pacific Elevator "A" to the new one "B." The firm gave their consent to the removal provided it should not involve extra insurance. But shortly after Mr. Eggleston discovered that the transfer would entail an extra insurance of half a cent a bushel, and at once notified Mr. Harper of this fact. However, the grain had been transferred in the meantime, and the owners, who still held the original receipts, then insisted that it be delivered from the elevator which it was consigned to. Mr. Harper, on the other hand, claimed that the charge was not consistent with the facts; and the difficulty rather arose from the refusal of Mr. Eggleston's request that the report of the grain transfer be dated Nov. 16 instead of Nov. 13, the later date being the more favorable from a financial point of view, but not in accordance with the facts. To substantiate his evidence, he mentioned over a dozen firms which were perfectly satisfied with the transfer of their wheat, having assured him that it included no extra insurance to them. The committee finally dismissed the complaint.

### CHICAGO ELEVATORS.

In 1852 a stranger, passing along the then almost empty banks of the Chicago River, would have noticed, standing at irregular intervals along the brink, some half-dozen low, clumsy-looking wooden structures. These were what served the West as grain elevators, and were owned by such firms as Orrington Lunt, Charles Walker & Sons, James Peck & Co., Dole & Runsey, and Bristol & Co. The system of elevating the grain was precisely the same then as it is now, with the exception of the absence of steam. The power was furnished by a huge lever or sweep on the roof of the elevator, which a melancholy horse dragged around from morning till night. The sweep kept in motion a system of cogged wheels, which in turn revolved the belts that worked the endless chain and buckets that elevated the grain.

The elevators began to handle grain in bulk in 1854, having theretofore been shipped from point to point exclusively in bags. Steam was introduced into Hiram Wheeler's elevator, which stood on the south bank about eighty feet east of what is now Clark street, in 1855. The others of course followed suit, and from that time on the business of elevating and storing grain increased as rapidly as the necessary railroad facilities sprang into life. Walker, Bronson & Co. built an elevator in 1856, but the

firm, after many changes in its name, went out of the elevator business in 1864. Hiram Wheeler in 1863 consolidated with Munger, thus forming the nucleus of the present firm of Munger, Wheeler & Co. In 1868 there were seventeen elevators in Chicago, with a storage capacity of 10,680,000 bushels. In 1871, before the fire, only fifteen elevators reported, but the total capacity was 11,375,000 bushels, thus showing an increase in capacity since 1858, when the total capacity was 4,095,000, of over 7,000,000 bushels.

#### THE CHICAGO ELEVATORS.

The following table gives a list of the Chicago elevators, their owners, date of construction, capacity, and the particulars concerning them:

NAME.	LOCATION.	PROPRIETORS.	CAPACITY.	COM- PLETED.	ESTIMATED RAILROAD CON- TINENT.	NO. OF ELEVATORS. RECEIVING SHIPPERS.	NO. BINS.	AV. DPTH BINS, FEET.	HANDY PER DAY-CARS.
C. B. & Q. Elevator "A"	Foot of Meagher street.	Armour, Dole & Co.	1,350,000	1873	\$ 300,000 C.	6	214	55	275 to 300
C. B. & Q. Elevator "B"	300 feet south of C.	Armour, Dole & Co.	900,000	1883	300,000 C.	10	50	50	500
C. B. & Q. Elevator "C"	Third street, near Halsted.	Armour, Dole & Co.	1,250,000	1873	250,000 C.	8	400	55	500
C. B. & Q. Elevator "D"	Third street, near Halsted.	Armour, Dole & Co.	1,000,000	1881	100,000 C.	12	400	55	500
C. B. & Q. Annex.	Korntown and Lumber	Armour, Dole & Co.	1,500,000	1880	300,000 C. & N. W.	12	400	55	425
Iowa.	Korntown and Lumber	Munger, Wheeler & Co.	800,000	1880	150,000 Various	12	60	60	60
Union.	Sixteenth and Lumber	Munger, Wheeler & Co.	1,000,000	1881	200,000 Various	7	40	101	60
City.	Rush street bridge.	Munger, Wheeler & Co.	700,000	1 72	150,000 C. & N. W.	6	4	65	250
Galena.	Foot of North Market.	Munger, Wheeler & Co.	200,000	1872	100,000 C. & N. W.	8	28 5	50	300
Northwestern.	Canal north of Lake	Munger, Wheeler & Co.	900,000	1883	150,000 C. & N. W.	4	150	50	100
St. Paul.	Canal north of Lake	Munger, Wheeler & Co.	400,000	1871	150,000 C. & N. W.	5	90	50	100
Rock Island Elevator "A"	South of "A."	Philp, O'Dell & Co.	1,500,000	1882	300,000 C. R. I. & P.	11	350	50	200
Rock Island Elevator "B"	Foot of Clark bet. 12th and 14th	Philp, O'Dell & Co.	1,000,000	1882	200,000 C. R. I. & P.	8	350	50	285
Central "A"	Foot of South Water.	J. & E. Buckingham	1,000,000	1872	250,000 Illinois Cent.	7	180	55	240
Central "B"	Foot of South Water.	J. & E. Buckingham	1,200,000	1889	300,000 Illinois Cent.	12	65	55	350
Illinois River Elevator	Foot of Washington ship	Norton & Co.	175,000	1885	40,000 None.	2	40	55	300
National.	Foot of Washington ship	Kellogg & Co. and Dock Co.	1,000,000	1873	250,000 Various	8	110	55	300
St. Louis.	South Halsted street bridge.	Kellogg & Co. and Dock Co.	1,000,000	1873	250,000 Various	2	40	55	300
Walsh.	Thirtieth street and river.	Geo. L. Dunlap & Co.	1,500,000	1882	300,000 W. St. L. & P.	10	254	60	300
Indiana.	Nineteenth street and river.	Geo. L. Dunlap & Co.	1,500,000	1882	300,000 Various	10	254	60	300
Neely & Hamilton's	Grove, near Archer avenue	P. D. Armour.	600,000	1878	100,000 Various	12	85	45	100
Danville	South Ashland, near levee.	P. D. Armour.	320,000	1873	100,000 Various	4	85	45	100
Pacific "A"	Haynes street bridge.	Chicago & Pacific Elevator Co.	750,000	1876	150,000 M. & St. Paul	5	110	55	95
Pacific "B"	Haynes street bridge.	Chicago & Pacific Elevator Co.	1,000,000	1885	150,000 M. & St. Paul	8	180	55	95
Totals.			26,075,000		\$5 415,000	197	4,174		



of filthy water fifty yards wide. "C" was designed by Baumann & Lotz. Seven shipping spouts run along the west side of the elevator, which would discharge 110,000 bushels of grain into a vessel in an hour should she be large enough to have them all run into her. The dimensions of the building are: Length, 315 feet; width, 112 feet; height, 142 feet. The engine is one of 750 horse power, with a 48-inch cylinder and a 16-foot boiler. The foreman, Mr. DeGroodt, claims that one day in 1877 or 1878, he is not certain which, he unloaded 400 cars, containing over 200,000 bushels, and that another day in the fall of 1880 he shipped into vessels 225,000 bushels. On another occasion he shipped 60,000 bushels in two hours, with only five elevators running. Elevator "D," as will be seen from the table, is the largest in the city. The architects were Baumann & Lotz. The house is 396 feet long, 100 wide, and 145 high. There are three lines of shafting along the shafting floor, with a friction pulley at each elevator. The engine is of 800-horse power, and a remarkable feature of the structure is the mammoth driving belt. This is said to be the largest belt in the world, being 286 feet in length, four in width, and nearly an inch in thickness.

Like its rival over the way, this elevator has something to brag of in the way of big shipping and unloading feats. One day in the fall of 1883 the propellers Boston, Scotia and New York had 160,000 bushels dumped into them between the hours of 7 a. m. and 3 p. m. In the same year 410 cars were unloaded in nine hours. The precautions taken against an outbreak of fire are very complete here. On every floor there are twenty-five tanks, containing 150 gallons of water each, placed at regular intervals, and the hose-pipes, all connected with the pump in the engine room, and ready for instant use, stand handy. Elevator "D" touches no corn, only the lighter grain being handled. The Elevator "E," which the "D" annex takes the place of, was commenced in 1881 and finished in 1882, after designs of Baumann & Lotz, and cost over \$100,000. At the time it collapsed there was stored in it 1,000,000 bushels of wheat, which, however, suffered no damage and was removed to other elevators. The annex is operated by "D's" machinery.

Since the opening of navigation this season the Iowa elevator has unloaded 13,000 cars of grain and shipped about 7,000,000 bushels. From Nov. 7 to July 31, 1885, it handled 60,000 cars. The Union is not put to very much use by its proprietors, except in cases of pressing necessity. The City is, in almost every particular, an exact counterpart of Armour, Dole & Co.'s "C." The plans for it were drawn by Alexander Miller, and it was one of the few elevators that escaped destruction in the fire of 1871. The biggest day's work ever done by this elevator in the way of discharging was about 200,000 bushels in ten hours, but the foreman claims that 100,000 could be added to this under pressure. A feature of the house is the trio of huge canvas conveyors, 208 feet long and 34 inches in diameter, running from end to end. The engine used is of 500-horse power, which runs considerably faster than the machinery, the former making fifty revolutions to the minute to the latter's thirty-two and one-half.

The Air Line was built originally by A. A. Munger and George Armour, but these merchants consolidated with the Wheelers shortly after its construction. The house is 274 feet long, 70 feet wide, and 130 high. From the five spouts on the south or wharf side grain can be loaded into a vessel at the rate of 15,000 bushels an hour. The elevator is driven by a 400-horse power engine.

The Northwestern is another of Alexander, or, as he has been nicknamed, "Sandy" Miller's productions, and its cheapness (\$100,000) is accounted for by the very low prices of labor and material existing at the time of its construction. The foreman of the St. Paul claims that in one day last season the propeller City of Rome, of the Lehigh Valley Line, had 150,000 bushels of grain loaded into her by him in half a day, and that he could beat this if the elevator were put on her mettle. Flint, O'Dell & Co.'s "A" was built on the site of what was formerly known as the Rock Island Elevator, which was erected in 1856 and torn down in 1882 to make room for the new one, which was designed by Baumann & Lotz. The architect of the "B" house was Alexander Miller. J. & E. Buckingham's two large elevators, Central "A" and "B," stand on the same sites as did two similar structures that were built respectively in 1855 and 1857 by Sturgis Buckingham. These were bought by J. & E. Buckingham in 1866, their lease from the Illinois Central having expired. The old "B" house was torn down in 1869, and the "A" perished in the great fire of 1871. These elevators used formerly to handle grain over the old Galena & Chicago, Burlington & Quincy Roads, as well as the Illinois Central, until the Chicago, Burlington & Quincy elevators were erected.

The Illinois River Elevator was until recently the property of William Dickinson & Co., but has now changed hands, having been purchased about three months ago by Norton & Co., the millers. It was built originally by Joseph F. Armour.

The newest elevator in Chicago now running is the Pacific "B," owned by the Chicago & Pacific Elevator Company, of which William H. Harper is manager. It was only declared regular by the Board of Trade directors for the receipt of grain about four weeks ago. Geo. A. Seaverns & Co. are, however, now engaged on a still newer one on Clark street, between Twelfth and Fourteenth, which will have a capacity of 600,000 bushels. This, though, will be used only as a private warehouse for the firm's own grain.

Only seven of the Chicago elevators so far are run on the system of paper-friction wheels described in the early part of this article. These are Armour, Dole &

Co.'s "D," Munger, Wheeler & Co.'s Iowa and St. Paul, J. & E. Buckingham's Central "A" and "B," and the Pacific "A" and "B." All the others are operated by the old system of cross-belts and clutches.

No grading of grain worthy of the name was performed in Chicago until 1856. The Board of Trade that year separated wheat into three standard grades, known as "white wheat," "red wheat," and "spring wheat." The most serious drawback at that time was the laxity in the system of inspection, bitter complaints being frequent as to the mixing of inferior with good grain prior to shipment. In 1858 a Board of Trade committee, consisting of Julian S. Rumsey, S. H. Butler, and Charles H. Dole, proposed a new system of rigid inspection, grading wheat as "club," "No. 1 spring," "No. 2 spring," and "rejected." The warehousemen agreed to this reform, and the Board of Trade passed resolutions establishing the grades as recommended. George Sitts was the first grain inspector appointed, and the Board of Trade's original reform committee was constituted the first Committee on Inspection.

In Chicago to-day there are twenty-eight elevators, with a total storage capacity of between 26,000,000 and 28,000,000 bushels of grain. The method of elevating and shipping is very little altered from what it was forty years ago, the principle being precisely the same, and the only difference the substitution of steam for horse power. Briefly, the principle on which grain is handled to-day in any of the elevators of Chicago is as follows:

The cars loaded with grain are run into the elevator, then the grain is drawn out of the car by scoops operated by steam into a receiver or "hopper," at the foot of the elevator. It is then elevated, by means of an endless belt and buckets, into a large receiving scale and weighed. Underneath each scale is a network of spouts leading into the different bins—each spout being marked with the number of the bin it leads to, and by means of these spouts the grain is discharged into a bin appropriated to the grade to which it belongs. When it is wanted for delivery the grain is drawn from the bottom of the bin to the elevator, where it goes again to the top of the building, and is weighed and delivered to the vessel or car on which it is to be loaded. In unloading vessels what is called a "dock elevator," or "dock-leg," is run into the hold of the vessel and the grain is elevated into the house, weighed, and run off into bins in the same fashion as it is from the cars.

It is in the direction of the machinery that the only improvement of recent years lies. In the modern elevator the power of the engine is communicated to the machinery by a huge driving belt, which keeps revolving one or more lines of iron shafting running through the building. The old plan, and the one on which the majority of the Chicago elevators are run, is to have the elevator pulleys mounted on sleeves, through which the line shafting is passed, and thrown in and out of gear with the line shafting by a clutch-coupling. An improvement introduced about ten or twelve years since is the paper friction pulley, but very few firms have adopted it. In houses in which it is used a paper friction wheel is placed on the line shafting upon which the bucket-belt pulley rides, and by which each elevator is run. The great advantage of the friction pulley is that while the main line of shafting is in motion any one elevator that may become choked or otherwise disabled can be thrown out of gear in a second by a gentle pull on a cord connected with a lever without the stoppage of the whole machinery of the house. The originator of this idea was Mr. C. D. Buckingham, who first applied it in the two Central elevators. He first had the friction wheel made of iron with a leather covering, which it was found would not answer. He then tried a wooden pulley, but this wore out even more quickly than the leather had done, and then paper was hit upon and found to fill the bill. Another improvement in the machinery worthy of notice that has come into use in the last fifteen years is the steam shovel, used for unloading grain from cars, with which all elevators are now provided.

It is estimated by competent judges that on the grain now stored in Chicago elevators there are charges for storage aggregating from \$1,500,000 to \$1,750,000. The only security that the elevator proprietors have for the collection of this money is the grain they hold, subject to the orders of the owners. The latter, of course, carry insurance on their stock to protect them against fire or any other mishap. Some of this grain has lain in the bins for two, and even three years, and is to all outward appearance as far from being shipped out as it was the day of its being unloaded into store. Until it is shipped the warehousemen have naturally to wait for their money. Under the present system of doing business the warehouse receipts calling for different quantities of grain pass from hand to hand, the firm which holds them of course losing the amount for storage while they shall be on his hands. In order to protect themselves the proprietors of the different elevators have witt in the last year adopted a new scheme, which is nothing more nor less than the actual insurance of their charges on the grain they are carrying for various merchants. The rates of insurance charged by the companies are the same as charged by the commission men who hold the warehouse receipts. The adoption of the plan is, as might be expected, hailed with delight by the insurance companies, to which the double premium paid on grain risks cannot but be welcome. The origin of the idea rests with Armour, Dole & Co. and Munger, Wheeler & Co., both of which firms have grain in their elevators to-day that has lain there from one to three years. The National, also, is said to be nearly filled with grain on which no storage charges have been collected for over eighteen months, and will not be until it is shipped out.

## NOTES FROM THE EXCHANGES

Tickets of membership to the New York Produce Exchange are quoted at from \$3,000 to \$3,100.

The Chicago Board of Trade has repealed its rule imposing a penalty for doing business at a less rate of commission than prescribed in the rules.

How the scalper talks in the pit is well told in the *Detroit Free Press*: "Follow me and you'll wear diamonds," he exclaimed in a loud tone. "This wheat is going up, and don't you forget it. I'm a bull from Bullville!" Then turning to the crowd he called out, "You fellows have sold too much of this stuff. I tell you you're going to see higher prices." Just then he glanced toward the telegraph office. A slate on which Chicago quotations are posted was just then turned and the price shown to be one-eighth cent lower than the previous quotation. My friend changed at once. Throwing his arms wildly into the air he dashed into the crowd with his plug hat far back on his coat collar, yelling at the top of his voice: "Sold! sold! this stuff is rotten! nobody wants it! sold! sold! I tell you, boys, there's too much wheat in this country and England don't want it!" Here the slate was turned again and the market shown to be one-fourth cent higher. My friend at once yelled: "Withdraw! I'll buy August at a half." There was some laughing at the suddenness of his change, but most of the crowd were nearly as much excited as my friend, and all were yelling in different keys what they would buy or sell, never mentioning the price, but saying at an eighth, a quarter, five-eighths or a half, as the case might be. One short, fat man, rather shabbily dressed, and chewing at the end of a cigar, removed the latter, and cried out in a rough voice: "I'll sell July for an eighth!" "What eighth?" asked a man near him. "D—! if I care what the rest of it is, as long as I get my eighth," he replied.

## RATS!

The gray rat (*mus decumanus*), commonly known as the Norway rat, is the only species familiar to us at the present time, though it is what in the South would be called a carpet-bagger. It made its first appearance in Cincinnati about the year 1816, and was quite common in 1820; but it did not invade country places, away from the cities, in the Western States, till about 1825. This species is a native of India. It began its immigration about the sixteenth century, reaching Russia by the way of Persia and the Black Sea. Early in the eighteenth century it was quite common throughout Northern Europe, and was brought to America from Sweden or Norway in the early years of our revolutionary war; but for many years it was confined to the regions east of the Alleghany mountains. It is said to have reached the West by the way of Buffalo.

Previous to the advent of the gray rat, this country was infested with the black rat (*mus rattus*). This species was a little more than half the size of the gray rat. It had a coat of fine, dark, lead-colored fur, and a very long tail. It was not so bold and aggressive as the gray rat, but was more active. It was omnivorous, but ate animal food only when it found its victim already dead. The gray rat, in a few years after its advent, exterminated the black species by eating their young and sometimes devouring full grown ones; for when the gray rat is hungry, it is often guilty of cannibalism—devouring its own young and sometimes the weaker adult members of its family, and has been known to attack children and even grown persons, when it is hard pressed with hunger. It is prolific, raising three or four families of young each year, and about a dozen in a family. It is now distributed over the whole commercial world, traveling by ships, steamboats, or railroads, and always as a "dead head." In Bengal and on the Coromandel coast, there is a rat (*mus giganteus*) which is nearly twice as large as our gray rat and is said to be very destructive in gardens and among poultry; but it is not a great traveler.

Rats can be prevented from burrowing under brick walls or into cellars by placing a layer of cuttings from the tin-shop under or around the bottom of the wall. They may be nearly exterminated locally by means of poison, by the introduction of the ferret, or even by a family of good cats, but the vagrant habits of the species make these remedies available only for a brief time.

A corn crib may be readily made rat-proof by supporting it on cedar or locust posts thirty inches high and capped with a stone or a broad board.

A grain bin lined with sheet iron perforated with small holes, after the manner of a kitchen safe, to secure ventilation, will defy rats. If rats cut a hole into a wooden bin, or pantry, and a piece of tin be nailed over it, the rats will spend a year in gnawing the edges of the opening.

There is a native wood rat in Florida and the Southern Gulf and Atlantic States. It sometimes infests out-houses and barns, but generally prefers the woods. It burrows in the ground and lives chiefly on nuts.





The cost of the proposed Nicaragua Canal is estimated at \$60,000,000.

According to estimates the Panama Canal will not be completed until the year 2065. In other words, one-twentieth part of the canal has been completed at a total cost of \$270,000,000.

The Canadian government has faith in the future of the Welland Canal. Its engineers have just completed plans for its enlargement to a fourteen-foot draught, so that large vessels can pass down to the lakes and the St. Lawrence River from this city to Montreal without lightening. The work will cost over \$1,000,000, and will be proceeded with at an early day.

O, yes, we suppose the canals are played out; at least the journals working exclusively in the interests of the railroads would have us believe so. Nevertheless, during a single week recently the canals of this state transported 2,177,000 bushels of grain, and the rails only 148,000 bushels. O, yes, the canals are played out—when navigation closes! Then the railroads put on the screws.—*Western Manufacturer.*

Whatever puts the Mississippi River in connection with the lake system is to the benefit of New York. The Hennepin Canal, extending from the Mississippi at Rock Island to the lake at Chicago, or to the proposed river at La Salle, would put the whole upper Mississippi country in communication with the lake system, or would do for the upper river system what the lake river would do for the lower Mississippi. New York should throw the weight of her great influence in favor of the Hennepin Canal during the ensuing winter.

The proposed ship canal across Ireland would be 127 miles in length, and would contain thirty locks. For ships of 1,500 tons the cost would be \$40,000,000; for ships of 2,000 tons, \$60,000,000; for ships of 5,000 tons and upward, \$100,000,000. It built on this scale the canal would be 200 feet wide on the surface and 100 feet at the bottom. The passage through the canal would be effected by a system of towage, and it is estimated that the passage of a ship from Galway Bay to Kings-town would occupy between twenty-four and thirty-six hours.

H. S. Taber, Captain of United States Engineers at Little Rock, Ark., writes to the *Arkansas Gazette* that an appropriation of \$2,500,000 has been recommended for the permanent improvement of the Arkansas River from Little Rock to its mouth. The improvement contemplates a channel at least 300 feet wide and six feet deep at extreme low water. About \$250,000 will be expended on the work during the fiscal year ending June 30, 1887. A number of smaller appropriations demanded for various purposes make the total expenditure for the next fiscal year \$377,131.

Take the four cities of Springfield, Ill., Indianapolis, Columbus, Ohio, and Harrisburg, which are all great railway centers and capitals of great states. They are old cities, and are located in the centers of prosperous agricultural and mining states, and yet their average population in 1880 was only 44,350; while their neighbors, Chicago, Louisville, Cincinnati and Pittsburg, located on or near the borders of the same states, and with no advantage over them except water transportation, average 279,150, or more than six times the number in the favored capital cities which lacked suitable water transportation.

When it is proposed to spend from \$10,000,000 to \$20,000,000 on the rivers and harbors of our vast domain, there is outcry against such extravagance. Yet the republic of France, with far denser population and more miles of railroad to the square mile of area than we, has just made a single lump appropriation of between \$175,000,000 and \$200,000,000 for rivers, harbors and canals. Think of the sum! An amount greater, as Maj. King shows, than all the money expended in the United States for internal improvements by the nation, the states and private corporations combined, from the foundation of the government down to the present time.

It has been reported from Washington that the friends of waterways in Congress will support a resolution to put the interests of all waterways into the hands of a new committee, to be known as the Committee on Rivers, Harbors and Canals. This step has been deemed necessary because the Rivers and Harbors Committee has always been denied jurisdiction of bills relating to canals, and the Committee on Railways, to which the interests of canals were intrusted, has never been, and from obvious reasons cannot be expected to be, friendly to them. The Hennepin people are most interested in the proposition, as they want their case to be considered without prejudice.

As has been said, water routes do not merely regulate charges upon railroads near their courses, but upon all parallel roads at a great distance, as under pooling systems their charges must be equalized. There is nothing more certain than that we are to have a hard struggle to keep our lead as a food supplying country, and we must give up the delusion that England depends upon us for food. It will only buy of us if we can deliver it to them

at the lowest cost. As Horatio Seymour aptly says: "If we fail to uphold our water routes, as protection against unjust and unwise charges for transportation, we shall suffer in the future;" and this paragraph, which should be written in letters of gold: "The chief element in the prosperity of every state or nation is the economy of transportation of persons and property. It is the most marked fact in the difference between civilization and barbarism."

We learn from the last annual report made by Gen. Poe, Washington, on river and harbor improvements in Michigan, that the improvements on the St. Mary's Falls Canal and River, providing a sixteen-foot navigation between Lakes Superior and Huron, have been completed at a cost of \$2,405,432. But the rapid increase of commerce necessitates still greater depth and additional lockage facilities. The latter work is estimated to cost about \$1,750,000, and, with sufficient appropriation, Gen. Poe thinks it can be completed in five years. The original project for giving the Hay Lake Channel of St. Mary's River a width of 300 feet and a depth of seventeen feet, Gen. Poe now proposes to modify so as to secure a depth of twenty feet. The total cost of this work is estimated at \$2,059,115. Two appropriations have already been made of \$200,000 in 1882 and \$125,000 in 1884, and \$500,000 are asked for next year, so that the work may be pushed on all along the line. At least seven years will be required to finish the work.

The immediate results of the enlargement of the Erie Canal in 1882 were to increase the capacity of the canal from an annual tonnage movement of 5,000,000 to 16,000,000, and to reduce the cost of transportation one-half. The length of the Erie Canal, from Troy to Buffalo, is 345 miles, and from Albany to Buffalo, 352 miles, with 656 feet of lockages. It forms the connecting link of water navigation between the Hudson River and tide-water at Albany and Troy, and the chain of inland lakes which extend to the center of the continent, connecting with Lake Erie at Buffalo and with Lake Ontario at Oswego. A few statistics will suggest the direct and indirect benefits which have been derived from the Erie Canal. From 1836, when an account of tonnage was commenced, to the close of 1882, the freight transported through the canal (including the laterals) amounted to 188,000,000 tons; and if we estimate for the years prior to 1836, it is safe to assert that fully 200,000,000 tons have been transported.

Regarding the solution of the inter-oceanic problem, a new plan has been proposed by E. L. Corthell, an engineer, to the effect of building a ship railway across the Isthmus of Tehuantepec. This scheme was exposed and detailed by Mr. Corthell at the recent meeting of the American Scientific Association at Ann Arbor, Mich., showing quite plausibly the ease of construction, the feasibility of lifting loaded vessels by hydraulic pressure, placing them on railroad trucks and transporting them overland at a rate of from ten to fifteen miles per hour, being more than twice the average speed of an ordinary canal boat, which is about two miles per hour. This, the engineer said, was the great drawback of canal transportation; and in no way could an ordinary canal compete with an ordinary railroad, as the power required to move a boat in a narrow canal increased as the cubes of the velocities. In support of his argument he pointed to the fact that in 1883 the three main trunk lines into New York City from the West carried 46,177,223 tons of freight, while all the New York State canals moved only 5,664,056 tons during the same period. Moreover, about 2,000 miles of canals in the United States, which were built at an original cost of nearly \$50,000,000, had since been abandoned. Commenting on the scheme of Mr. Corthell, a correspondent to the *Clinton Herald* produces some more arguments which do not show favorably for the future of canal building. He is convinced, in the first place, that the Panama Canal will be a failure, as the cost of construction has greatly been underestimated. Already \$100,000,000 of the \$125,000,000 it was estimated the canal would cost have been expended, but not 10 per cent. of the work has so far been completed. The difficulties to be overcome have grossly been underrated, and there is hardly any probability of ever surmounting them. As to the Nicaragua Canal project, he thinks the distance to be too great, as it would require about four days for a ship to pass through. The same difficulty is claimed for the Hennepin Canal. The distance from the Mississippi to Chicago being over 150 miles, it would take from fifty to seventy hours for a loaded boat to pass through, while the railways can haul freight between the two points in from five to seven hours. He winds up with the assertion that the Mississippi is losing from year to year in importance as a waterway, and that eventually it will become an obstruction to transportation rather than a benefit.

The farmers' elevator at Fergus Falls is completed, and buying has commenced. It contains twelve bins, and has a capacity of 18,000 bushels. Business for the new enterprise is inaugurated under unfavorable conditions—a depressed market owing to the close of lake transportation and a material advance in rail rates East—but this should not discourage those interested in the enterprise. The fact that there is an independent buyer in the field, backed by the producers and business men of the section, will have its legitimate effect as well on a low market as a high one, insuring fair prices according to the existing conditions. These independent elevators in fact act as regulators, and force agents of the monopolies to deal reasonably fair with the people.—*Farmers' Advocate.*

## THE GRAIN TRADE OF WINONA, MINN.

Although of comparatively recent date, the flour and grain trade of the town of Winona, in Minnesota, has reached an importance which is second in the state only to those of Minneapolis, St. Paul, and Duluth. Winona is the milling and grain center of Southeast Minnesota; in fact, some of the Winona mills and elevator systems are among the best and largest in the country. The facilities for handling the extensive grain business are perfect, and the city is equipped with a number of elevators of considerable capacity.

There is in the first place the fine elevator of the Porter Milling Company, having a storage capacity of 90,000 bushels and a handling capacity of 5,000 bushels per day. This elevator was built in 1877, and the past year, closing Sept. 1, the concern handled altogether 1,500,000 bushels of wheat, using about 700,000 bushels for milling, and disposing of the rest. Besides the company has elevators at some thirty-five stations on the Winona & St. Peter and Dakota divisions of the Chicago & Northwestern R. R. The total investment of the company in the mill and elevators is about \$300,000. L. Stout is the wheat buyer; M. Eamcke the inspector, and L. D. Frost in charge of the shipping department.

The grain interests of the Winona Mill Company are still more extensive than those of the above mentioned company. During the past year they handled 2,000,000 bushels of wheat, using 1,200,000 bushels in their own mill. They operated thirty-five elevators and warehouses on the Winona & St. Peter R. R., besides their elevator in Winona, which was built in 1882, at a cost of \$15,000. It is 40x72 feet, 100 feet high, and has a storage capacity of 140,000 bushels. John Flaven is the grain inspector, and the total investment of the company at Winona, and in the outside elevators, is \$333,000.

A. D. Ellsworth, owner of the "Minnesota City Mills," does a large business in wheat, barley, oats, and seeds. He has buying stations at Morgan, Sleepy Eye, Marshall, and Minnesota City. The elevator and warehouse adjoining the mill afford a storage for 25,000 bushels. The quantity handled the past year was 300,000 bushels, of which 153,000 bushels were ground and the balance shipped.

Aside from the trade of the above milling concerns, an extensive business is done by the grain dealers of Winona. H. J. O'Neill, one of the largest operators in the state, has his central office in Winona, operating twenty-eight elevators on the River Division, Chippewa and Wabasha Division of the Chicago, Milwaukee & St. Paul R. R., and five on the Winona & St. Peter Road. He employs about 100 men, and handled 3,000,000 bushels of wheat on last year's crop. The firm of G. H. Krundick & Co., composed of Messrs. Krundick and A. P. Lambertson, have buying stations at Minneka, Alma, Pepin, Utica, Lambertson, Redwood Falls, Milford, North Brand, in Minnesota, and at Kampska and Elrod, in Dakota. They handled about 500,000 bushels of grain last year, their deals being chiefly in wheat, barley, and oats. Their elevator in Winona, which was built in 1882 at a cost of about \$19,000, has a capacity of 45,000 bushels, and a forty-horse power engine. Wm. Schlading is the engineer and inspector. Otto Sontag, who has been interested in the Winona grain trade for fifteen years, operates the elevator near the depot of the Chicago, Milwaukee & St. Paul R. R., which has a capacity of 45,000 bushels, and is well fitted for handling and cleaning grain. The amount of grain handled last year was 325,000 bushels, being mainly wheat and barley. Fred Sommer is the grain buyer for the house, Fred Bucholz engineer and inspector. W. G. McCutchen's Winona warehouse and elevator has a capacity of 22,000 bushels, and the total amount handled last year was 150,000 bushels of wheat and barley. C. H. Eamcke is the grain buyer and Thos. Sulzer the inspector of the concern. The investment in the plant is about \$10,000. Mr. McCutchen also operates elevators at Lewistown, St. Charles, Kasson, and Waseca, furnishing wheat chiefly on milling orders. D. Morrill & Son have been in the grain business at Winona for twenty years. They handled about 50,000 bushels of grain last year, including wheat, barley, oats, corn, and their warehouse will store 25 bushels. Messrs. Garlock & Smith have warehouses in Winona capable of holding 30,000 bushels of grain. The latest addition to the Winona elevators is that of the Winona Elevator Company, with a storage capacity of 300,000 bushels of grain. The company, which has been incorporated with a capital stock of \$100,000, is composed of H. J. O'Neill, President; Albert Harrington, Vice-President; W. M. Shepard, Secretary and Treasurer. The following is a summary of Winona's flour and grain business:

Investment in flour mills and elevators.....	\$1,668,006
Output of flour for year ended Sept. 1, barrels.....	422,890
Amount of grain handled, bushels.....	8,975,000
Number of men employed in mills and elevators.....	500
Monthly pay-roll, partially estimated.....	\$25,000

## TWO OF 'EM.

Times are pretty hard with some of the small brokers in the new Board of Trade district. A deaf and dumb man went into an office in the Open Board of Trade building the other day, and, seizing a piece of paper, wrote:

"I am hungry."

The broker took the piece of paper, read the unhappy words, and scrawled under them:

"So am I."



## Fires, Casualties, Etc.

The elevator at Table Rock, Neb., was partially unroofed by a recent storm.

L. Schnell, grain buyer of St. Charles, Minn., had his safe burglarized recently of \$96.

D. Barrow, miller and grain dealer, of Amherstburg, Ont., Can., was burned out recently.

John Beavan, of the firm of Fleming & Boydon, of the Chicago Board of Trade, is dead, at the age of about 30 years.

M. J. Smyser, a grain dealer at Minneapolis, Kan., was instantly killed at that place by a freight car running over him.

The Minnesota & Northern Elevator, at Grand Forks, Dak., burst Nov. 27, spreading 5,000 bushels of wheat over the ground.

J. T. McAllister, lumber and grain dealer, Boulder, Col., has suffered loss by fire to the extent of \$1,000; insurance, \$1,500.

Roberts' mill and elevator, at Arlington, Neb., was destroyed by fire Nov. 18, the loss amounting to \$15,000, with no insurance.

C. Graff, of the firm of Siegfried Gruner & Co., cotton, grain, and coffee merchants, of New York City, died Nov. 27, at the age of 43 years.

The stoppage of a grain spout in Brand & Co.'s brewery, in Chicago, led to the discovery that August Schrimshaw had fallen into the spout and was suffocated.

Ernest Cundy, whose body was paralyzed below the hips by a forty-foot fall in Washburn's elevator, at Anoka, Minn., last spring, is reported as slowly sinking.

Thomas Fitzpatrick's granary, two miles west of Edgerton, Wis., was destroyed by fire Nov. 17, with about 200 bushels of grain. Loss, about \$1,000; insured for \$500.

Brooks Bros.' elevator, at Park River, Dak., was consumed by fire Nov. 19, together with about 40,000 bushels of No. 1 hard wheat. The loss was estimated at \$60,000; insured for \$21,000.

James H. Rogers, a deacon in the Presbyterian church at Dunlap, Ill., has been arrested on the charge of having aided and abetted in the destruction of Warren & Co.'s Dunlap elevator, which was burned in a mysterious way some time ago. The deacon is the owner of a rival elevator, and it is alleged that he accompanied a livery stable keeper named J. B. Oglesby on one or more occasions, when the latter visited one George Strickle for the purpose of inducing him to apply a torch to the elevator. Oglesby and one William Garland were arrested some time ago on the same charge as Rogers.

Early in the morning of Nov. 29 a fire originated in some unknown way in the tower of George A. Seavern's elevator "C," located on Grove street, Chicago, Ill., and the building was all in a blaze by the time the fire department arrived, which could do nothing but to confine the flames to this elevator, thus saving the main "Alton Elevator," situated just across the railroad track. The consumed elevator, which was built only about a year ago at a cost of \$15,000, was 50x100 feet and 40 feet high, frame built and covered with sheet-iron. The bins of the elevator contained about 60,000 bushels of wheat, valued at \$50,000, which were almost a total loss. The loss on the building and contents was fully covered by insurance.

A mysterious murder case is reported from Duluth, Minn. A. E. Pruder, grain inspector, was examining, Nov. 30, the cars of wheat that had come in from Dakota the previous night, when to his horror he discovered the dead body of a man lying prone across the center of the car, his face and head besmeared with clotted blood. The man was about 35 years of age, and was clad in workman's clothes. Robbery was apparently the cause of the crime, for the victim's pockets had been turned inside out, except one peculiar pocket on the inside of his pants, which contained \$465 in paper money, and had evidently been overlooked by the robber. A coupling pin, spattered with blood, was found in the car, and no doubt was the instrument used for perpetrating the deed. The car in question left Lisbon, Dak., Nov. 26, being four days on the road.

A bucket shop should be managed by a pale man.—*Columbus Dispatch.*

## Special Notices.

The Chicago Scale Co. sell Scales of all kinds, also Portable Forges and Blacksmiths' Tools of all descriptions at about one-half usual prices. Buyers will save money by sending for their price list.

### TO ELEVATOR AND MILL MEN.

A young man would like a situation in elevator or feed mill. Have had ten years' experience in the elevator and grain business and produce commission. Good references furnished. Address  
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To lease an elevator doing a business of from 300 to 700 carloads per year. Best of references given. Address

J. W., care AMERICAN ELEVATOR AND GRAIN TRADE, Chicago, Ill.

### SITUATION WANTED.

By a young man of good habits. Not afraid of work. Experienced in the grain and stock trade and capable of managing same. No objection to a place with plenty of business. Chance to work up more an object than big pay. Iowa or Nebraska preferred. Address

GRAIN AND STOCK, care AMERICAN ELEVATOR AND GRAIN TRADE, Chicago, Ill.

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A new Fanning Mill. For particulars address  
M., care AMERICAN ELEVATOR AND GRAIN TRADE, Chicago, Ill.

### FOR SALE.

A new steam elevator; all modern machinery. Trade established twelve years. Only one other elevator in the place. Address

LOCK BOX 39, Stuart, Iowa.

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A good elevator of 15,000 bushels' capacity, equipped with good machinery. Located in the great corn belt of Iowa on the line of C., M. & St. P. R. R. For particulars address

J. W. STEVENS, Defiance, Iowa.

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Steam elevator. Good trade. Capacity, 10,000 bushels. Now handling carload of grain per day. Will be sold at two thirds value. Everything nearly new. Best of reasons for selling. Address

R. HEFFELFINGER, Denison, Iowa.

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Situated on a trunk line, in Ohio and Indiana, in good towns, four nearly new grain warehouses, strictly first-class throughout; for sale cheap. Best of reasons given for wishing to sell. Address

E. E. Co., care AMERICAN ELEVATOR AND GRAIN TRADE, Chicago, Ill.

### FOR SALE.

A one-third interest in a line of five new steam elevators, situated at Humboldt, Table Rock, Pawnee, Burchard, and Liberty, in the great corn belt of South-eastern Nebraska. An unparalleled opportunity offered to an immediate purchaser. No opposition. Call on or address

THE FARMERS' AND MERCHANTS' BANK, Humboldt, Neb.

### FOR SALE.

A No. 5 Victor Smutter, Barnard & Leas' manufacture; also one Reed's Novelty Grain Separator, tip-top, for cleaning flax seed. Both machines in first class condition, and have been very little used. One Smith & Beggs Engine, 14x24 stroke, piston valve, vertical steam feed pump. Boiler 20 feet long, 48-inch shell, cast-iron front, breeching and grate bars. Stillwell & Blerce heater, 24 inches diameter. Smoke stack, guy rods, steam pipe, and everything complete for setting up. Engine in good running order. Will sell cheap for cash. Address

WM. A. WALKER, Supt. Union Elevator Co., Kansas City, Mo.

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GEO. SPENCER

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Milling orders for car lots of choicest hard wheat  
Promptly Filled.

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Commission Merchants  
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200 & 202 ROYAL INSURANCE BUILDING,  
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Selling by Sample a Specialty.  
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on Margins, a Specialty.

Dealers in Grain and Provisions cannot afford to do without their  
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Special Information indicating course of markets, have been verified  
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request.

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Of all kinds of Grain, Feed and Flour. Corn and Choice Milling  
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Extensive Dealers in Mill Feeds.—Millers in States  
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The indications are that the present crop of Corn will  
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shelling to do, and want to take the Corn all off without  
breaking the grain, should procure McGrath's Cham-  
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McGrath & Son,  
LAFAYETTE, IND.

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PHILADELPHIA, Nov. 12, 1885.

Mr. Geo. W. Dawson, of Mount Vernon, Ohio, has this  
day taken charge of the West and Southwestern territory  
to manage this field for us in the sale of the Trimmer  
Grain Scouring, Rubbing, Polishing, Separating and  
Smut Machine combined.

We have given him full control of this department  
for the sale of the above machine, and we hope the mill-  
ing fraternity will look upon him as our General Agent  
with pleasure, as he is a gentleman of rare qualities, and  
we know he will commend himself to all who may meet  
him.

THOMPSON & CAMPBELL,  
1030 Germantown Ave.

## STRONG INDORSEMENT.

PEKIN, ILL., Nov. 28, 1884.

E. B. Freeman, Peoria, Ill.—Dear Sir: In answer to  
yours of 22d, we would say that we are very much  
pleased with our new elevator. We consider it a model  
for convenience. We can handle our grain through it  
at very little cost. The machinery all works smooth to  
perfection. The dump bins hold 15,000 bushels instead  
of 10,000, giving us 5,000 bushels more room than we ex-  
pected. We will say further that the elevator was built  
at the estimated cost. We shall be pleased any time to  
say a good word for you, to any one you may refer to us.  
Yours truly, SMITH, HIPPEN & CO.

PEORIA, ILL., March 10, 1885.

E. B. Freeman, Peoria, Ill.—Dear Sir: The plans  
which you got up for our elevators at Crescent City, Ill.,  
and La Hogue, Ill., were very satisfactory. The carpen-  
ters found no trouble in building by them, and since  
they have been running have proved as well arranged  
as any elevators we know of. Yours truly,  
P. B. & C. C. MILES.

PEKIN, ILL., March 10, 1885.

E. B. Freeman, Peoria, Ill.—Dear Sir: We write you  
this to say that you have built for us an excellent eleva-  
tor. We don't know a thing to find fault with. We are  
more than pleased with it. You may consider us your  
friends. Yours, A. G. WALKER, Manager  
for "The Hudnuts."

Established 1840, Incorporated 1884.

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Successors to  
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Sole Manufact-  
urers of the  
Old Reliable  
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BRADFORD  
Portable Mills  
For Any Kind of  
SMALL GRAIN.  
Also Manufactur-  
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Nos. 25, 27, 29, 31 and 33 Lock St.

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Write for Catalogue. CINCINNATI, O.

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eign, and much other matter you will want to  
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Boiler PurgerFor Preserving Iron and Keeping  
Boilers and Flues from Scaling.

It will remove the scale from any Boiler, and  
by its continued use, will keep it from forming.  
It will not injure the Boiler, Valves or Cylinder,  
nor foam the water, nor injure the water for  
drinking purposes. It is easy to use, being in a  
liquid form; it can be put directly into the Boiler,  
through the Safety Valve, Whistle Valve, or by  
Force Pump, or into the Tank.

By its use, from fifteen to forty per  
cent. can be saved in the cost of fuel, be-  
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one or two years.

For particulars, address

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\$1.00 PER ANNUM.

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rental buys a first-class Telephone  
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Chance for agents. No previous experience required.  
Circulars free. WM. L. NORTON, Buffalo, N. Y.

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BUHR STONESPowerCorn Sheller  
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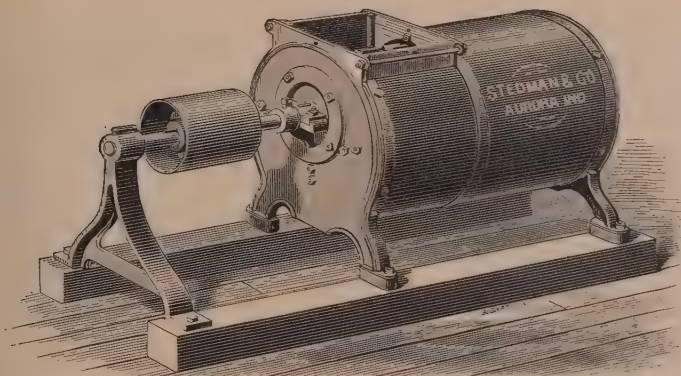
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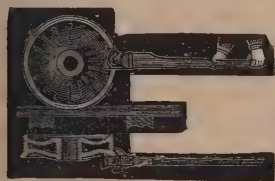
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With it One Man can Move a Loaded Car.

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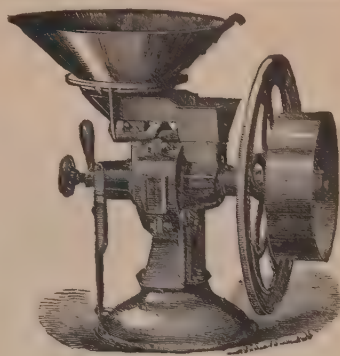
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Send to nearest office for Circular.



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For Corn and Cob, Feed and Table Meal.

This mill received the First Premium at the Pennsylvania State Fair 1884. Send for Circular.

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SHOULD BE IN EVERY ELEVATOR IN THE LAND.

## Cleans AND Polishes THE GRAIN.

Removing all impurities without breaking or wasting.

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Messrs. THOMPSON & CAMPBELL, Philadelphia, Pa.:  
GENTLEMEN—The Trimmer bought of you 3 years ago still gives good satisfaction. I cannot see how it could be improved upon; can scour as hard or light as you please, and the suction is under perfect control and runs easy.  
Yours truly, (signed) E. S. BLACKMORE.

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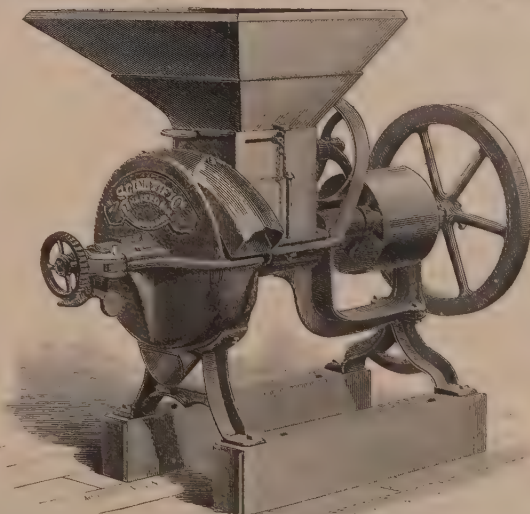
Ear Corn, Shelled Corn and all Small Grains.

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Also furnish all kinds of

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**CONTRACTORS FOR COMPLETE EQUIPMENT OF FACTORIES & MILLS. ALL KINDS AGAINST FIRE.**  
**ABUNDANT WATER SUPPLY. NO FREEZING. INSTANT ALARM. LOW INSURANCE.**

**GOLD AND SILVER MEDALS IN 1883 AT BOSTON, AMSTERDAM AND RIGA.**

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## Self-Registering Weighing Machine

— FOR —

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Great Saving of Labor and Time. *Automatic*, and therefore the only reliable System of Weighing and Recording.

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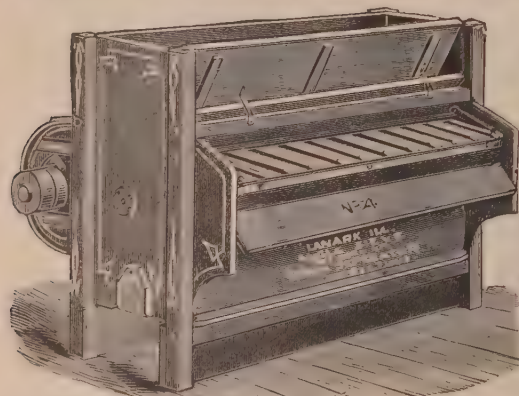
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(D. T. Weed and H. A. Webber's Celebrated Patent.)

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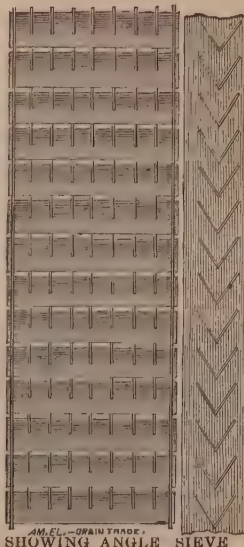


Everybody is astonished to see the work it does. We challenge competition, for general cleaning purposes. We CAN and WILL separate oats and wheat raised together, the first time through the Separator, and make it fit for market, and not run any wheat over in the oats. No other Separator can help running wheat over, where the suction or blast is depended on to make the separation, which we claim is not the correct principle of separation. The peculiar construction of the sieve, and the motion of it, do the work. We can take oats out of barley just as well, though not quite so fast. No other Separator attempts to do this. We can also clean buckwheat, flax, rice or any other small seeds that any other separator will handle.

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## CHAMPION OF THE WORLD !

The Soft Corn of this year has again demonstrated the superiority of the "Champion" in shelling tough corn without breaking the grain. No corn can pass through this Sheller without being completely taken from the cob, if the machine is kept in reasonable repair, and run at the proper speed. Address

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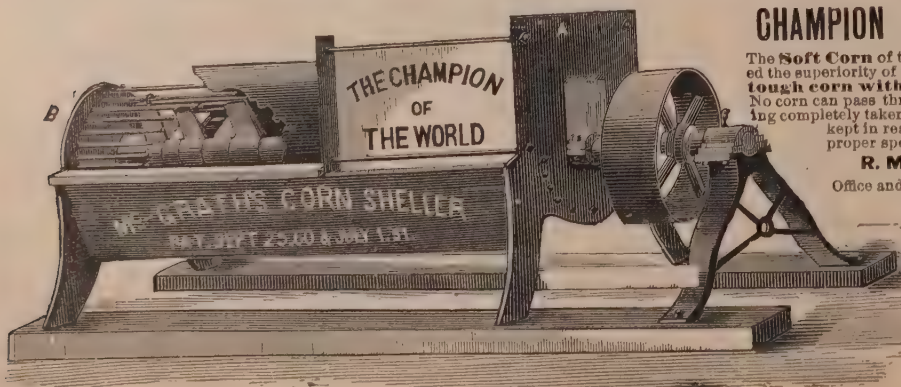
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**PACKING**

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Send for Samples and  
Prices to

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## Improved Grain Tester



Invaluable to parties handling Grain or Seed Guaranteed perfectly Accurate. Every Elevator Man should have one. Send for new Illustrated List "E" and Special Prices for Cash.

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Manufacturer of  
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Flour Triers, Magnifying Glasses,  
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— FOR WAREHOUSES AND ELEVATORS —

## THE BARNARD & LEAS MFG. COMPANY'S

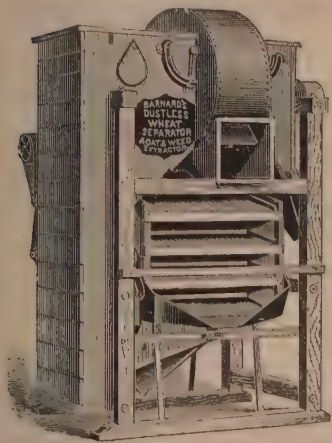
THREE-SIEVE DUSTLESS ELEVATOR SEPARATOR.  
 THREE-SIEVE DUSTLESS WAREHOUSE SEPARATOR.  
 IMPROVED DOUBLE-SCREEN DUSTLESS CORN CLEANER, with SHAKE-FEED BOTTOM.  
 THE ADVANCE COMBINED BRUSH AND ROD BEATER BARLEY AND GRAIN SCOURER.  
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 DUSTLESS WHEAT SEPARATOR.  
 VICTOR CORN SHELLER.  
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 EUREKA FLOUR PACKER, with Barnard's Improvement for Raising Platform.  
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 LITTLE VICTOR CORN SHELLER.

ALSO THE **DAVERIO 3-HIGH ROLLER MILL**, { The Lightest Running and Most Economical Roll on the Market.

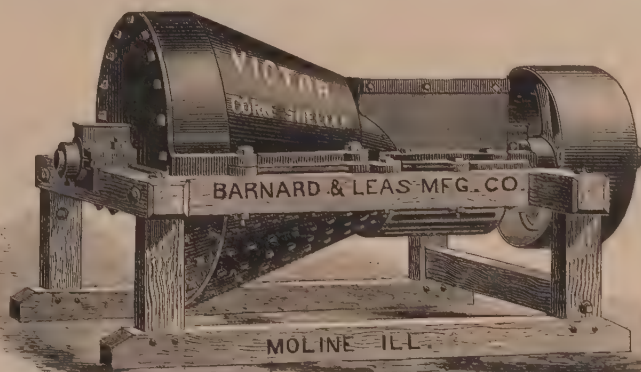
NOTE TESTIMONIAL FROM A WELL KNOWN ELEVATOR FIRM:

**MESSRS. BARNARD & LEAS, MOLINE, ILL.** — GENTLEMEN: Inclosed please find draft for amount for Warehouse Separator. I must say I am well pleased with the Separator, and will take pleasure in recommending it to others, for I am sure it cannot fail to give the best of satisfaction if purchasers will only follow instructions in setting it up, which is a very easy matter. I superintended the setting up of mine, and it works splendidly.

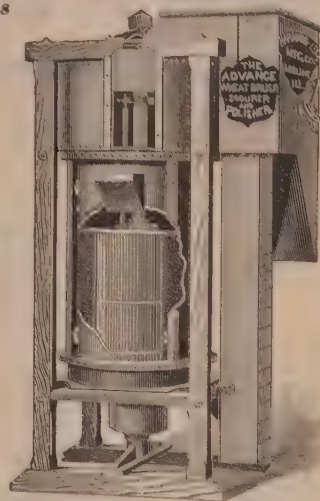
Yours truly, J. M. DAVIDSON.



Separator.



Victor Corn Sheller.



Advance Combined Brush and Rod Beater Barley Scourer

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With Forced Ventilation;

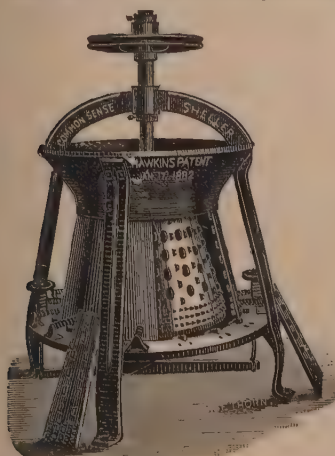
From 20,000 to 100,000 bushels capacity. Can be placed across the street, and one man can bring it to the sheller. The snow and shelled corn all taken out before the ear corn goes in crib. No waste. Crib lumber costs 3 cents per bushel. Drawings and Instructions reasonable.

### The Common-Sense Automatic Corn Sheller.

The only Self-Adjusting Automatic Sheller in the market. It possesses more advantages than any other known machine; takes less power to operate, and adjusts itself to the size of Ear Corn. Will shell more corn, and that too without splitting the cob. Leaves little or no corn on the cob; grinds and breaks less of the kernels, is less liable to be broken (by having some hard substance pass through the sheller) on account of the flexibility of segments and safety pins in plate—which are of wood and can easily be replaced. Works right or left as may be required.

Six Sizes Made. Send for Prices.

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### Elevator and Mill Supplies

Leather, Cotton, Rubber

### BELTING

Elevator Buckets, Bolts, Mill Irons, Etc.

Prices Close, and Quality the Best.

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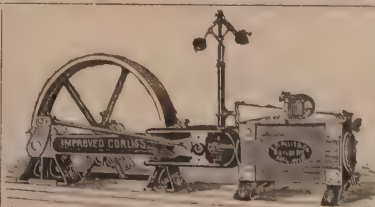
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### REYNOLDS' IMPROVED CORLISS ENGINE.

Especially Designed For MANUFACTURING Purposes.

Has No Equal for Elevators and Flour Mills.

Will SAVE in FUEL from 33 to 60 per cent. over any ordinary Engine.



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THE FREEPORT MACHINE CO. - FREEPORT, ILL.



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THE UNION ELEVATOR  
COMPANY,

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ADOPT OUR PLANS, WITH ESPLIN SYSTEM

—(((OF)))—

## DRIVING

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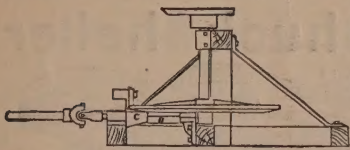
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We have never met with stronger Competition than in this case, nor have our Plans ever been subjected to a more severe inspection. The fact that such men as comprise this Company select our System and Plans in preference to all others, is as good proof as the world can produce that we have no equal in this business. IT WILL PAY ALL ELEVATOR MEN to examine this System before ordering.

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For Prices, write the Manufacturers, or G. W. CRANE, Minneapolis, Minn



## Portable Mill Manufactory.

ESTABLISHED 1851.  
 21 SIZES AND STYLES  
 —OF PORTABLE—

## FRENCH BUHR MILLS.

WE MAKE

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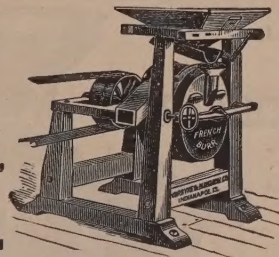
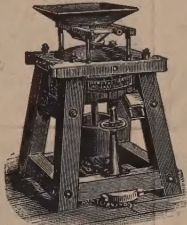
14, 18, 20, 22, 26,  
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COMPLETE OUTFITS

Roller Process Corn Meal, Hominy,  
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RECEIVED  
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WILL BE PAID FOR ANY  
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of same size that can clean and  
 bag as much Grain or Seed  
 in one day as our

**Patent MONARCH**

Grain and Seed

**SEPARATOR**

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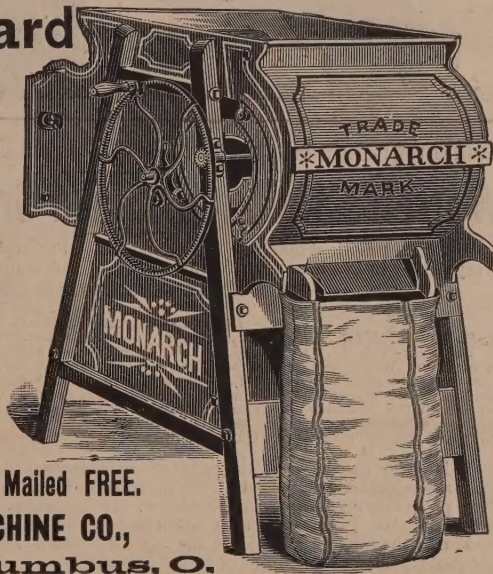
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 Improved Warehouse Mill  
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Which we offer cheap.

Circular and Price List Mailed FREE.

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**Cheap, Simple,**

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**Is Absolutely Secure**

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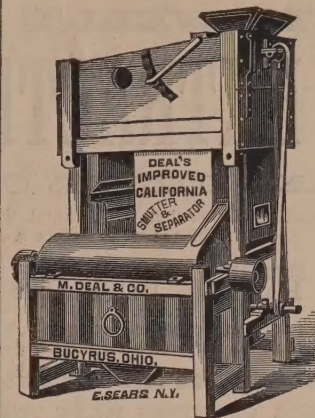
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Unlike other Sample Envelopes, this has its Loop or Fastening A, secured to Envelope, and is in no way likely to become lost, broken or bent out of shape; but is always ready for use. It is the Cheapest and Most Complete Package for sending samples on the market.

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## Grain Cleaning Machinery.

We manufacture a complete line of

**Cleaners, Scourers, AND Brush Machines**

For Mills and Elevators.

**WARRANTED THE BEST IN AMERICA;**

The purchaser being the judge after 60 or 90 days' trial  
 We guarantee every machine to give entire satisfaction or no pay. Send for circulars; it will pay you.

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"Gilbertson's Old Method," } **EVERY SHEET TO BE STAMPED.**  
 "Camaret" Roofing Plates.

Many complaints from Roofers and others having reached us that cheaper plates were used where "Gilbertson's Old Method" and "Camaret" guaranteed plates were required, the makers of the above brands are now erecting the necessary machinery TO STAMP EVERY SHEET OF BOTH BRANDS WITH THE NAME OF SAME.

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THE large and increasing demand for the "Camaret" brand sold by us under a positive and definite guarantee as to material, coating and careful assortment, is sufficient evidence of the appreciation of same by the trade at large. Each and every box is strapped, and contains a card with the name of the party assorting same.

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We can furnish Patent Tin Shingles manufactured from our Guaranteed Brands of Roofing Plates to those requiring same.

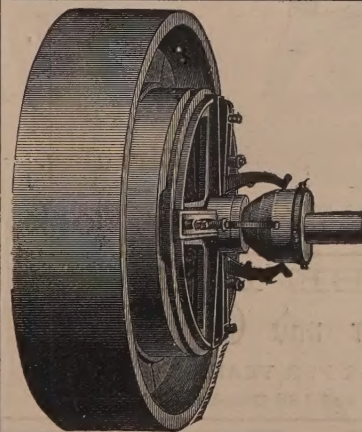
"Gilbertson's Old Method" EXTRA HEAVILY COATED Roofing Plates.

We guarantee the "GILBERTSON'S OLD METHOD" (Extra Heavily-Coated) Roofing to be a better coated and heavier plate than "M. F." "Old Style," or any other extra coated plate, and if not found so, all boxes to be held subject to our order.

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**They are Sure, Strong and Noiseless.**

You can start a load with this Clutch, at any speed, with ease and safety.

**Also Split Pulleys, Dead Pulleys**

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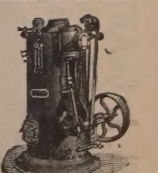
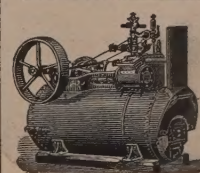
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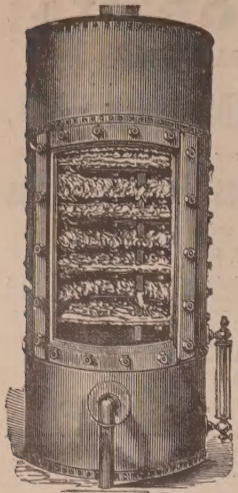
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# STILWELL'S PATENT LIME EXTRACTING HEATER

AND FILTER COMBINED.

Is the only Lime Extracting Heater that will Prevent Scale in Steam Boilers, removing all Impurities from the water before it enters the Boiler.

**THOROUGHLY TESTED. OVER 3,000 OF THEM IN DAILY USE!**

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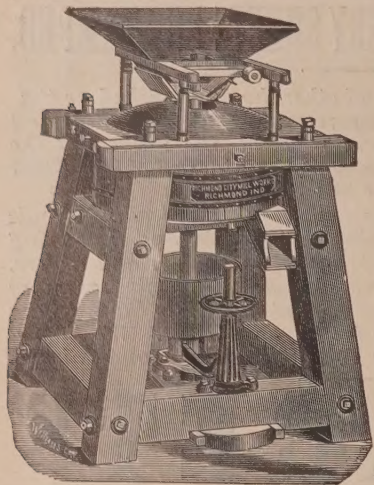
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**RICHMOND, INDIANA,**

Manufacturers of

**IMPROVED MILLING MACHINERY**

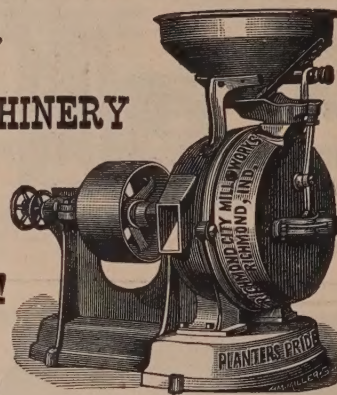
**PORTABLE MILLS**

Of Every Description,

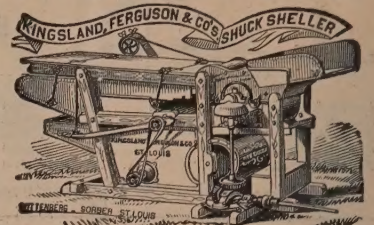
**THE BEST MADE!**

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Write for Description and Prices.



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The ONLY SHELLER in the world that shells corn **with** or **without** shuck or husk on.

We make FOUR different sizes, mounted on wheels or on skids. Send for Circular.  
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**Grind your own Bone,**  
Meal, Oyster Shells, GRAHAM Flour and Corn in the **WILSON'S PATENT** MILL. 100 per cent. more made in keeping poultry. Also **POWER MILLS** and **FARM FEED MILLS.** Circulars and Testimonials sent on application. **WILSON BROS., Easton, Pa.**



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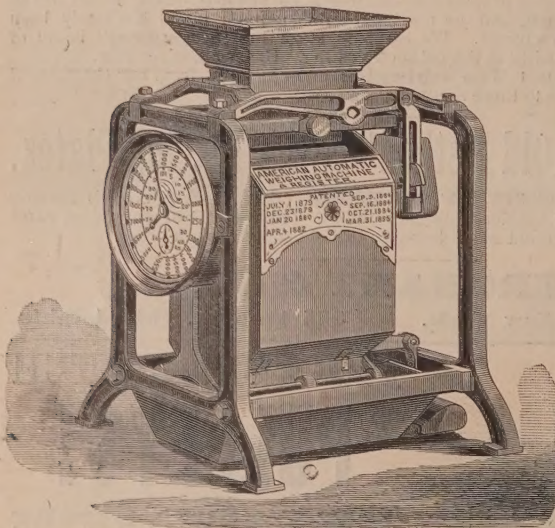
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## Remember, this Machine Dries and Cools Grain in one Operation, Worrell's No. 2 Combined Drier and Cooler.

The only practical machine in the market. Perfectly adapted to the wants of every dealer in grain or manufacturer of meal and hominy.

**READ THE FOLLOWING LETTER:**

OFFICE OF C. M. ALGER, Proprietor City Mills,  
Dealer in Grain and Manufacturer of Corn Meal, Feed and Hominy,  
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Yours truly, C. M. ALGER.  
This Drier has been in **successful operation** nearly four years, is **simple and economical** to operate. No increase in the insurance in the above instance. Very profitable on damp or musty wheat. It is an excellent grain cleaner, and removes the must from **dry** grain. Can be run at a profit every month of the year.

For further information send for my Illustrated Drier Pamphlet, giving prices and descriptions of machines of larger capacity.

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## The Lotz Patent Grain Shoveling Machine FOR UNLOADING CARS

Is without clutches and driven by paper friction. It works automatic and noiseless, and the length of pull of hoist rope can be instantly adjusted. A big saving in ropes, scoops, lubricants and repairs over all other Shoveling Machines, so much so that the entire cost of a machine will be saved by its more economical operation within a few years. **Eleven Double Machines have been in practical operation in Rock Island Elevator "A" Chicago, since 1882.**

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& CO.,**  
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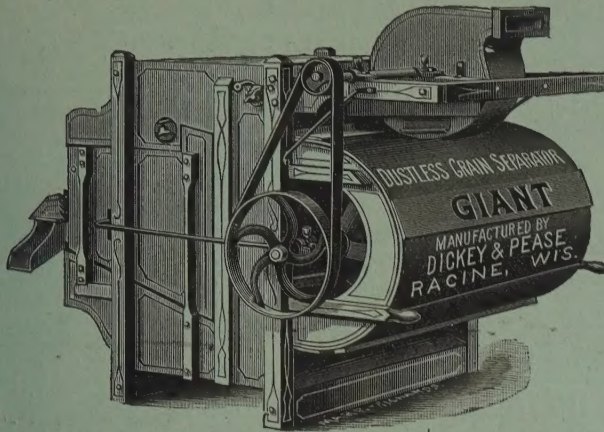
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# "GIANT" DUSTLESS GRAIN & FLAX SEPARATOR!



We claim for the "Giant" **Superiority over all other Separators** for the following strong reasons:  
**1st.**—Its simple in its construction, **Strong and Durable.** Any one competent to run a fanning mill can operate the "Giant."  
**2d.**—The height from the floor to the top of the receiving hopper is but 4 feet 3 1/2 inches, hence it will accommodate spouts from different points the same as a fanning mill, that is without being obliged to move the machine.  
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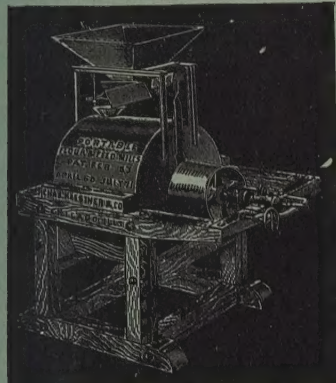
any other Separator that will do the same work

**4th.**—This machine will clean and screen better and faster than any other Separator made, sizes being equal. **Every Separator GUARANTEED to give Satisfaction**  
 These Separators are also made with the "side shake" for the special purpose of cleaning Flax Seed.

**SENT ON APPROVAL TO ANY RELIABLE PARTY.**

For Descriptive Circulars and Prices address

**DICKEY & PEASE, - - SOLE MANUFACTURERS, RACINE, WIS.**



**The King of Portable Grinding Mills.**

**THE KAESTNER PATENT.**

Built in Four Sizes, 16, 20, 24 and 30 Inches.

SUITABLE FOR ANY POWER, 2 TO 15 HORSE.

Each Mill Guaranteed to Give Entire Satisfaction, or Money Refunded.

**OVER 6,000 IN USE.**

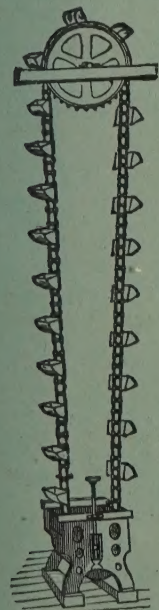
Live references in every state and territory. Will grind Wheat, Corn, Rye, Oats, etc. Write for Catalogues, etc

**CHAS. KAESTNER & CO.,**

**Machinists, Founders and Mill Furnishers,**  
 Grain Elevator Machinery a Specialty.

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## Roller Chain Belting



**DETACHABLE**

In every Link. Especially Designed for

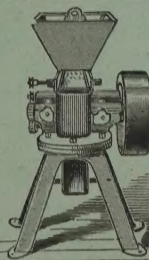
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—FOR HANDLING—

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Before placing Orders send for Circular and Price List. Address

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**The Treble Reduction Roller Feed Mill.**

To Millers, Elevator Men, Farmers, Stockmen and others:

We call your attention to the above mill for grinding feed of all kinds, fine or coarse. For ease of management and durability it has no equal. Manufactured by **W. H. EYNON,** 63 Center St., Cleveland Ohio.

**GEO. L. JARRETT,**

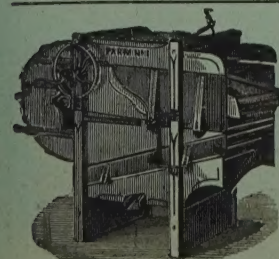
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 IN ALL KINDS OF

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CORN SHELLERS, CORN CLEANERS, WHEAT AND OATS CLEANERS, BELTING, ALL KINDS, ELEVATOR BUCKETS AND BOLTS, IRON WORK OF ALL KINDS, OILS AND SUPPLIES

OF EVERY DESCRIPTION,

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**THE BEST FARMERS**  
 And all Warehousemen and Seed Dealers, Everywhere, Use the **OLD RELIABLE**

**"CENTENNIAL" FANNING MILL.**

They will all tell you that it takes the Cockle and Oats out of Wheat, and is the only perfect Cleaner, Grader and Separator of all kinds of Grain and Seeds. The only Two-Shoe Mill and the **BEST in the World.** If you want some interesting information about Machines that pay for themselves the first year, and bottom prices, send your name on a postal card to us. **WE MAKE THEM.** Where did you see this advertisement?  
**S. FREEMAN & SONS, Racine, Wis.**

# HILL GRAIN-SCALE COMP'Y, DETROIT, MICHIGAN,

—MANUFACTURERS OF—

**Automatic Grain Scales,**

ACCURATELY WEIGHING AND REGISTERING

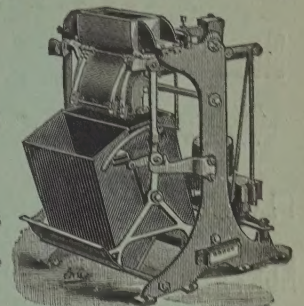
ANY SPOUTED MATERIAL IN

Flour Mills, Elevators, Breweries  
 Distilleries, Malt Houses, Oil Mills,  
 Rice Mills, Starch Factories, etc.

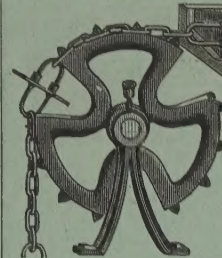
**BRANCH OFFICES:**

In New York, Boston, Chicago, Cincinnati, St. Louis.  
 In Baltimore, Denver, Atlanta, San Francisco, Montreal.

Send for Illustrated and Descriptive Catalogue.



## CLEAN WORK!



**HARRISON CONVEYOR.**

**ALL WROUGHT IRON.**

**No Mixing of Grain.**

IT CARRIES Grain, Seeds, Ear Corn, Wet or Dry Malt, Coal, Sand, Saw Dust, Tan Bark, Stone, Cinders, Clay, Bricks, Boxes, Blocks, Packages, Paper Pulp, Cotton Seed, Etc., Etc.

SEND FOR CIRCULAR AND PRICE LIST.

**BORDEN, SELLECK & CO., Gen. Agts., 92 & 94 Lake St., CHICAGO, ILL.**

## KNISELY & MILLER,

129 & 131 South Clinton St, CHICAGO,

Slate, Tin and Iron

**ROOFERS!**

Manufacturers of

**CORRUGATED IRON**

For Roofing And Siding.

This cut shows our method of fastening Corrugated Iron to Elevator Bins to allow for settling and raising.

**T. C. SNYDER & CO.**

—MANUFACTURERS OF—

**IRON ROOFING, SIDING AND CEILING,**

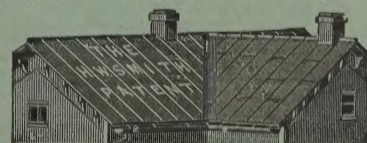
(The H. W. Smith Patent is the best in use.)

PLAIN,

Corrugated,

CRIMPED,

BEADED,



And Jobbers in

IRON ORE

PAINT,

CEMENT,

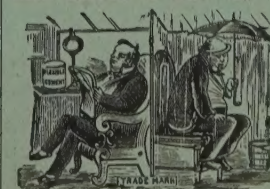
And Roofers' and Builders' Papers.

**Patent Calamined Iron in Quantities---A New Thing.**

Coating is indestructible, will not scale, is soft, solders more strongly, and is superior to Galvanized Iron or Tin for all purposes. Protected both in body and surface. Circulars, Price Lists, and Samples mailed at request.

**CANTON, - - - OHIO.**

## ELASTIC CEMENT!



Invaluable for Repairing and Pointing Up all kinds of Water Leaks around Chimneys, Copings, Skylights, Gutters, Cupolas, Dormer Windows, Slate, Stone, Brick, Wood, Iron, etc. Slate Roofs, Hips or Joists, Copings, Iron, Stone or other work bedded in this Cement will never leak or become loosened.

**FLEXIBLE PAINT,**

Composed of Paint Skins boiled in Linseed Oil and ground fine with iron metallic. The toughest, most durable, prettiest and cheapest Paint ever manufactured for all outside work exposed to weather. Dries quickly, with solid skin like India Rubber.

Ready for Use.

SEND FOR CIRCULARS AND PRICE LIST.

**VANDERVOORT & TUCKER, - 116th Street, East River, NEW YORK CITY.**

In writing please mention this paper.



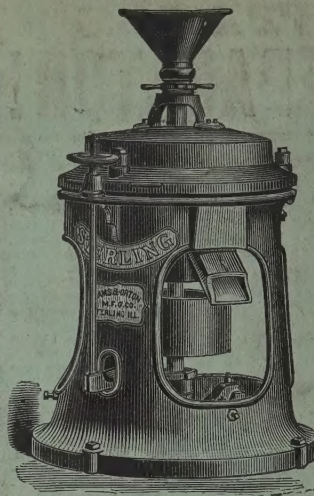
# GREAT WESTERN MFG. CO., LEAVENWORTH, KANSAS.

Steam Engines,  
PULLEYS,  
SHAFTING,  
GEARING,  
FLOUR MILL  
—AND—  
ELEVATOR  
MACHINERY  
—OF—  
Every Description.



CORN  
SHELLERS,  
SEPARATORS,  
SCALES,  
BELTING,  
Elevator  
Cups,  
BOLTING CLOTH,  
STEAM PUMPS,  
PIPE AND FITTINGS.

We Carry the Largest Stock of Mill and Elevator Supplies to be found West of the Mississippi River.



THE FINEST LINE  
—OF—  
**Portable Mills,**  
Both UPPER and UNDER RUNNERS;  
—ALSO—  
**Wire Rope Transmissions**  
PULLEYS,  
Shafting, Couplings, Gearing,  
ETC., ETC.  
Send for Lists, with Cuts, Descriptions and Prices; also  
**TREATISE ON WIRE ROPE TRANSMISSIONS,**  
If Interested.

Williams & Orton Mfg. Co., { 400 Locust Street, } Sterling, Ill.

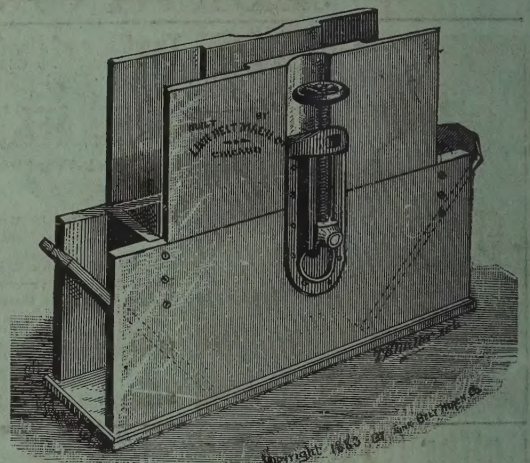
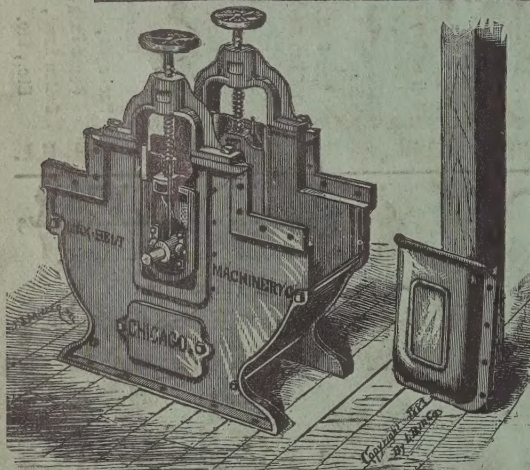
## THE LINK-BELT MACHINERY CO.

CHICAGO.

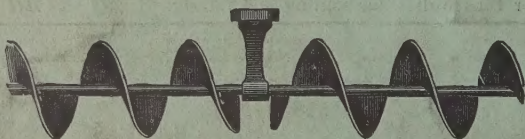
ALL SIZES OF

**ELEVATOR BOOTS**  
IN IRON AND WOOD,  
FOR  
**LINK BELTING**  
—OR—  
**FLAT BELTING,**

CARRIED IN STOCK.



## SPIRAL CONVEYORS!



Patented April 17th, 1883.

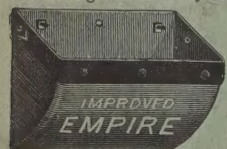
The Webster & Comstock Patent Backbone Steel Conveyor is the BEST for the following reasons: ALL WEARING PARTS are STEEL; only the best material is used, and only skilled and experienced workmen are employed in its construction. Steel, as is well known, possesses much greater wearing qualities than iron. It is also a stiffer material, rendering the flights less liable to bend back and break off when subjected to a heavy strain. The steel also takes a high polish, making less friction in running through the grain. Our flights are all stamped out with dies, thus insuring a true and smooth running Conveyor.



PAT. FEB. 6, '83.

**COUPLING.**—Our Coupling has points of advantage over any Conveyor Coupling in the market. The collar into which the Coupling fits is made of steel, and has, on its inner side, a feather, "A," which fits into the slot "B," in coupling, thus relieving the shaft of all twisting strain.

By a recent improvement it admits of disconnecting and taking out one length of conveyor without moving back or in any way disturbing the whole line.



**DRIVING ENDS.**

On all Driving Ends and every alternate coupling we furnish our improved Patent Steel Collar and Lug, made in one piece. As the greatest strain is always on the driving end, this improvement will be appreciated by all users of Spiral Conveyors.

**OTHER SPECIALTIES.**

"Common Sense" and "Empire" Buckets, Elevator Bolts, Steel Grain Scoops, Mosher Patent Bag Holder, Elevator Turn Heads, Elevator Boots, "Power" Grain Shovel, Lenox Car Loader, Belt Buckles, Car Starters, etc.

—Send for Catalogue. Address—

**WEBSTER & COMSTOCK MFG CO.,**  
125 and 127 Ontario St., CHICAGO.



## PERFORATED SHEET METALS

—FOR ALL KINDS OF—

## Grain-Cleaning Machinery

—USED IN—

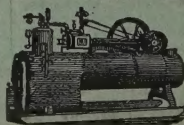
Elevators, Warehouses, Flour and Rice Mills, Cotton and Linseed Oil Mills Etc., Etc.

Iron and Zinc for Rolling Screens, Corn Screens, Grain Dryers; Perforated Floors for Kilns used in Drying Oats, Corn, Fruit, etc. Smut Mill Jackets of all kinds and sizes made to order. We will RENEW YOUR SIEVES for Oat Separators, Receiving Riddles, Corn Screens, etc., at Short Notice.

SAMPLES AND PRICES ON APPLICATION.

Branch Office: **THE HARRINGTON & KING PERFORATING CO.,**  
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Manufacturer of  
Portable,  
Stationary  
and  
Agricultural  
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**Engines and Boilers**  
Portable and Stationary, any size.  
**PIKE BROS.,**  
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Orders Filled Promptly.

